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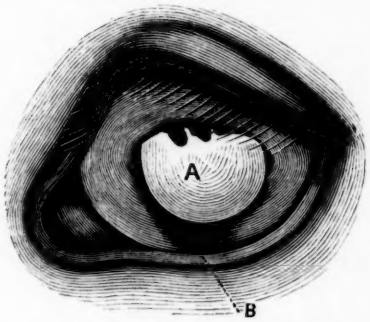
DISLOCATION OF THE CRYSTALLINE LENS IN THE HORSE.

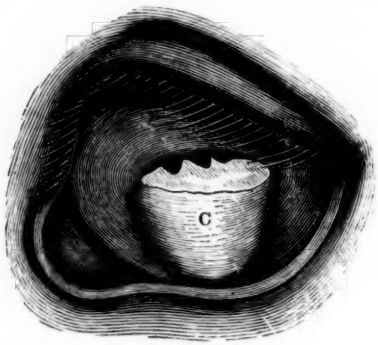
BY J. A. NUNN, F.R.C.V.S., ARMY VETERINARY DEPARTMENT, GLASGOW.

JUDGING from the lack of literature on the subject, this accident is of rare occurrence in the lower animals; which seems strange when it is remembered that the usual causes are blows or injuries to the head, such as hunters and steeplechasers are liable to. Three different forms of dislocation have come under my notice at various times—in the horse, mule, and ox. The first I have endeavoured to depict in the drawing No. I. The lens is here protruding, at



the lower edge, through the pupil into the anterior chamber, suspended by the upper portion of the suspensory ligament, the lower being ruptured. The weight of the lens A pressing on the lower border of the iris, causes it to recede backwards, as shown at

B. The second form is shown in the drawing No. II., in which the lens is dislocated behind the lower edge of the iris, causing it to bulge forwards as is shown at C. The third form that has



come under my notice is that in which the dislocation takes place behind the upper portion of the iris, when, of course, the bulging will be seen in the same situation.

Cases are on record, in the human eye, of the lens being retained by shreds of the suspensory ligament, and moving backwards and forwards with the motions of the head.

Professors Chelius (*Heidelberger Klinische Annalen*) and Ammon (*Zeitschrift fur die Ophthalmologie*) record cases of spontaneous dislocation in apparently healthy eyes, the lens either lodging behind the iris or passing through the pupil into the anterior chamber, gradually becoming opaque, with loss of vision. Mr. Middlemore, in his treatise, vol. ii., page 49, reports a case in which the lens passed into the anterior or posterior chamber, according to the position of the head, preserving its figure and transparency. Démours (*Traité des Maladies des Yeux*) relates two cases in which the patient, suffering from lenticular cataract, regained the vision by the lens becoming partly dislocated and the opacity sinking behind the pupillary opening. Dislocation into the vitreous humour is said to generally take place with the capsule entire, but both it and the suspensory ligament may be wholly or partially ruptured. If the dislocation is total, the lens will fall back, increasing the depth of the anterior chamber; but if it be only partial, it will remain swinging about with every motion of the head, being suspended by the ligament.

Dislocation beneath the conjunctiva is described as only taking place after very severe injuries, when the sclerotic is ruptured; and

the lens, torn away from its attachments, is forced through the rent, the capsule being usually ruptured. This generally takes place in the upper part of the eye, between the insertion of the recti muscles and the margin of the cornea.

POISONING OF CATTLE BY ACETIC ACID.

BY W. WARD, M.R.C.V.S., MANCHESTER.

THIS occurred on a large dairy farm, and, in my opinion, was due to the acetous fermentation of brewers' grains.

Symptoms.—Diminished secretion of milk; no desire for food; tremors of the muscles; uneasiness; paddling with the feet; elevating one hind limb, and then the other, in a peculiar manner; great abdominal pain; pulse weak and frequent; temperature varied little from normal.

In progression the animals moved in a strange manner, the hind limbs being drawn upwards, backwards, and then outwards, after which the cows soon became paralysed, dying in convulsions.

The striking *post-mortem* appearance was found at the cardiac end of the rumen, which was of a deep-blue colour; this gradually diminished to a mere trace at the abomasum, the mucous membrane being easily separated.

CASES OF LYMPHADENOMA.

BY A. W. RUSSELL, F.R.C.V.S., ARMY VETERINARY DEPARTMENT, DUBLIN.

CASE I.—Black mare, 9 years old, General No. 785, No. 6 Company, Commissariat and Transport Corps.

This, the first case in my personal experience, occurred in the practice of my predecessor in charge, with whom I was fortunately able to see it in almost daily consultation, and the following description is compiled from the company case-book, as recorded by him:—

History.—This mare is reported to have been in low condition for a considerable time, notwithstanding a good appetite. She had been dieted in the troop stable, and relieved from duty as much as possible, under the orders of the officer commanding the company.

Her medical history is as follows:—On the 14th May, 1884, her molar teeth were examined and found to be irregular from uneven wear. These irregularities were removed with the rasp; she was dieted in the usual manner for a few days, and then discharged for light duty. As she still continued to fall away in

condition, and was reported to be incapable of performing even light duty without fatigue, she was again admitted to the infirmary on the 2nd June, 1884, and entered as a case of "Asthenia," the following symptoms being noted:—Skin hard, harsh, dry, and unthrifty in appearance; conjunctivæ rather pale; mouth sour, and dorsum of tongue furred and pasty; pulse small and compressible; bowels torpid.

She was now placed in a comfortable loose-box, carefully and nutritiously dieted, receiving a liberal allowance of green grass in addition.

The medicinal agents used were alteratives—aloes, antacids, and stomachics, followed by tonics, as iron, gentian, nux vomica, arsenic, with ol. lini in food.

The appetite remained good throughout, and the functions were naturally performed, but she continued to fall away in condition, and was consequently deemed unfit for further military service and cast; but whilst awaiting authority to be sold, she rapidly became so thin and weak as to be unable to accompany the other cast horses to the auction. On the 4th August, 1884, she was unable to rise without assistance, when stimulants were administered; but as she remained so weak and anæmic, a board of veterinary officers was assembled to consider her case, who recommended that she should be destroyed. This recommendation was sanctioned and carried out on the 5th August, 1884, when a careful *post-mortem* examination was made, which disclosed the fact that this patient was the subject of Lymphadenoma, with the following appearances:—

Body extremely emaciated and anæmic; spleen much enlarged, and studded with prominent rounded masses, varying in size from a walnut to a large egg, and situated more particularly at its larger end. These nodules were of a greyish-white colour, encased in a dense fibrous capsule, firm in consistency, and, on section, grated under the knife from calcareous depositions, and presenting a stellated appearance from the hypertrophied radiating trabeculæ. Both lungs were infiltrated with lymphoid elements in a diffused form, more or less throughout their structure. The anterior lobe, left lung, was emphysematous. The heart appeared hypertrophied. Other organs normal.

Case II.—Bay gelding, 14 years old, General No. 245, No. 6 Company, Commissariat and Transport Corps. Admitted 24th April, 1885.

History.—On an inspection parade, about two months previous to admission, I noticed this animal had an enlargement on the off side of the neck, over the anterior rings of the trachæa, about the size of a pigeon's-egg, irregular in shape, firm and unyielding,

feeling very like a broken ring. The officer commanding the company informed me that, to his personal knowledge, this enlargement had existed, without apparent change, for upwards of two years. As it did not appear to interfere with the animal in any way, I took no further notice of it at the time, thinking it might have resulted from a previous injury. Subsequently this horse was, on the 21st March, 1885, transferred to the Curragh camp for duty, being at this time in fair serviceable condition, returning to my charge on the 24th April, 1885, when he was paraded for my inspection in the usual manner. I now found him very low in condition, weak and anæmic, with a very evident mark of a vesicant having been recently applied over the whole course of the trachæa, from the larynx to the sternum. The enlargement before noted was now much increased in size, nodulated, and firm to the touch, and with a chain of similar enlargements, varying in size, extending down the off side of the neck over the jugular gutter, with one very much larger than the rest, near where the trachea enters the thorax. There was also a diffused thickening round the fauces.

Symptoms.—Generalised from the daily record. Pulse ranged from 42 to 48, always weak and very compressible, with weak action of the heart; respiration from 14 to 24, which, as the disease advanced, became abdominal in character, and accompanied with very considerable stertor and dyspnœa, caused by the increasing thickening around the fauces. Auscultation revealed an increased bronchial blowing, with an absence of vesicular murmur over the greater part of both lungs, and towards the termination of the case, an absence of sound over the lower portions of both cavities; conjunctivæ watery and bloodless, with a yellowish tinge. Temperature—internal—on admission, was $101\frac{1}{5}$, and varied but little throughout, the highest and lowest readings being $101\frac{4}{5}$ and 101 respectively. The external temperature was always abnormally low. Evacuations normal. Appetite remained good throughout —I might say at times voracious; but, notwithstanding, there was steady advancing marasmus from malassimilation, and latterly, by difficulty in deglutition, a considerable portion of both fluid and solid food being returned *via* the nostrils, caused by the infiltrations of the lymphoid elements around the fauces; this also induced an almost continuous flow of a mucoid discharge from the nostrils and mouth, to relieve which the patient was constantly sipping small quantities of fluid (cold water from choice). The hypertrophied cervical lymphatic glands, and others between the branches of the lower maxilla, rapidly increased in size, and before the termination of the case, I fancied I could detect a decided enlargement of the spleen. I may add, that as the case advanced,

the patient remained a considerable portion of his time lying down, generally on the left side with his legs doubled under him in a natural position, evidently from extreme prostration. He ultimately succumbed on the morning of 1st July, 1885, apparently without a struggle, almost a skeleton from inanition.

Treatment.—The following medicinal agents were administered: Ferri sulph., Ol. lini, Potass, Iodidi, Acid arsenici, Pot. carb., Nux vomica. He was also most carefully and nutritiously dieted, and every attention was paid to his general comfort.

Post-mortem Appearances.—Body extremely emaciated and anæmic. The pharyngeal, sublingual, and cervical lymphatic glands, more particularly on the right side, were extensively hypertrophied, weighing collectively several pounds. The fauces were nearly blocked with diffused infiltrations of lymphoid elements; the jugular vein was occluded by a firm adherent thrombus, from its division near the parotid gland to near its entrance to the chest, where its coats were lost in the substance of an enlarged gland. The whole of the salivary glands appeared normal. The thorax contained a quantity of a clouded serous fluid, and lymphoid elements were diffused through the parenchyma of both lungs. The spleen contained a number of nodulated tumours about the size of a walnut, the mesenteric glands were very slightly enlarged; in other respects the abdominal organs appeared normal. The hypertrophied glands, when cut into, presented a yellowish, caseous, stellated appearance.

OBSERVATIONS ON SOUNDNESS.

BY R. H. DYER, M.R.C.V.S., LIMERICK.

(*Continued from page* 329, *vol. xxii.*).

WINDGALLS or Bursal Tumours constitute an affection which has been from time immemorial, I believe, known by the first name written, from its being supposed that the bladder contained air or wind. Anatomists have given other and more surgical, as well as expressive titles to these swellings, namely, bursal enlargements and ganglia. The latter term is open to objection, because it has a wide and somewhat foreign signification. The word "ganglion" is generally considered to refer to an enlargement or swelling, or "knot-like enlargement in the course of a nerve," etc.; this term, therefore—although employed by members of the human profession when speaking to veterinarians with reference to such enlargements—is, as I have said, open to an objection, as it does not faithfully convey to persons the precise meaning of the word. I would much prefer employing that which is less objectionable,

and at the same time more expressive, *i.e.*, tumefied bursæ. The word "windgall" should never pass the lips of a surgeon; nor, indeed, is the more modern term, *bursæ mucosæ*, less erroneous. Windgall, on the other hand, would lead us to infer that the sac contained air; secondly, the surgical and scientific one, ganglion, will indicate situation or course of a nerve; and, thirdly, bursæ mucosæ most positively relates to its containing mucus. It will, doubtless, be easily understood why each and every one of the above appellations should be abolished for ever from veterinary nosology. It has often been remarked that it matters but little what name a disease is known by, provided it be understood; but in this, the nineteenth century, surely such a word as "windgall" ought not to be found in any work on surgery. As I don't profess to be engaged in arranging such a work in the present instance, I shall not be expected to place before the readers of the VETERINARY JOURNAL a very elaborate paper upon the nature and treatment of these affections. I write "affections" from the fact of bursal enlargements being said to be found in many situations under a variety of names, such as capped elbow, capped hock, bog-spavin, thoroughpin, etc., all of which have been considered as one and the same disease. A description of the first would in that case generally suffice for all, although some of them undergo much greater changes than others, depending upon their magnitude as well as their situation.

A bursa is described as a small synovial sac, found in the vicinity of joints and tendinous sheaths, which secretes a fluid in every way analogous to that formed within a true joint, and which is termed synovia. Indeed, many of these bursæ are actually in direct communication with the interior of a joint. Their use is supposed to be that of preventing friction, concussion, etc., of parts; and being placed between structures, they will naturally have such a tendency, the oil-like fluid which they contain being admirably adapted for that purpose. When, however, disease is set up, and the bursæ become enlarged or swollen, inconvenience, and sometimes lameness, result therefrom. This is not of necessity the case. Numerous causes have been assigned for the commencement of a bursal tumour, viz., work, sprain, and others, as active agents in promoting disease. Doubtless concussion is the principal one, whether in youth or adult age. It has been declared that a colt, not having been broken, cannot have bursal enlargements through work or a sprain. It does not follow, as a matter of course, because an animal has not been trained or put to work, that the disease which we are considering is not caused by overwork or sprain. How often do we witness colts exerting themselves in mere play, beyond their powers and

strength! The most marked case in proof of this assertion—I could relate a good number in foals—occurred in my practice some time before this account was penned. A doctor of medicine, who usually had something good in young thoroughbred stock, and who had good class animals for racing purposes, had my attention directed to a two-year-old colt which had not been either trained, worked, or lunged, but had occupied a small, very small paddock. This animal had what he termed a large bog spavin, and he was anxious to have it explained how, or in what manner, such an affection originated. The colt was, at the time I saw him, in a large loose box; the ceiling rather lower than it should have been, and it consisted of woodwork. On looking about, I discovered abrasions of the wood ceiling, as if much violence had been used with a blunt instrument. This was pointed at, and the owner very innocently said that the colt used to amuse himself by standing upon his hind feet, and pawing the ceiling with the front feet—this had often been witnessed, and it was considered great fun. He could not suppose that so trifling a matter should cause all this disease. This amusement caused tumefaction of the bursæ before alluded to, and converted a two hundred guinea animal into a comparatively valueless one. Thus it will be seen that actual work, or the process of training, is not absolutely necessary to produce disarrangement of these sacs. In thoroughbred breeding studs, I have found the foals, of about from five to eight months old, which are in the frequent habit of galloping in the paddock, prone to this complaint, and I used to apply a mild vesicant to the legs, which of course effectually stopped the gallop, and allowed time for nature to repair the injury.

Blood Spavin and Bog Spavin have usually been considered by persons ignorant of the structure of the parts, to be synonymous. More than once I have refused to operate upon animals affected with these diseases, as I felt convinced I should—in the cases referred to—not add anything to my reputation as a veterinary surgeon. I am of opinion, in our examinations as to soundness, we should bear closely in mind the *stage* in which we find enlarged bursæ. Doubtless all practitioners are aware that there are many stages, or states, in which these swellings are found to exist. They don't attack every animal in a similar manner, nor do they assume the same appearance in every joint. Take, for example, that affection termed capped elbow, which is usually caused by the heel of the shoe. This generally terminates in suppuration or resolution; therefore, I am inclined to believe a capped elbow should *not* be classed with these diseases. Take another example, capped hock. This is generally the result of a blow produced by kicking, or it is sometimes brought on by the animal rubbing

the hock against a rough wall. This is another disease, strictly speaking, not resembling those of bursal enlargements met with in the vicinity of the fetlock joints; this, however, and that known by the name of thorough pin, will be considered in their proper places. For the sake of brevity, I would divide tumefied bursæ into soft and hard. The soft bursæ—I now refer to the front fetlock joints—seldom produce any inconvenience, except occasionally in racing stables. The bursæ become enlarged, as a general rule, by a very slow process; hence it is that, whatever derangement there may be in existence, it is but little felt, owing to the gradual development of disease. On the other hand, when referring to tumefied bursæ in the *hardened* state, we shall have to look a little more closely to the parts or structures upon which it is found to impinge. Lameness is often produced by the pressure of hardened bursæ upon the nervous filaments, and especially will a horse be lame when that pressure is exerted upon the terminal portions of the metacarpal nerves. This being the case, it can readily be understood how it is that bandages so often are found to cause the irritation we are desirous of preventing. When, however, the bandage is wet and applied loosely, it has not that irritative effect as when it is placed *tightly* about the joint, and allowed to become dry and hard. It is this which proves so troublesome to a practitioner in the treatment of such affections; his instructions are not always carried out in a proper manner. When bursal enlargements are small, soft, free from inflammation, and not tender upon pressure, there is but little to fear in giving an opinion as to the soundness of the animal, especially in aged horses, known or suspected to have done much work; it will be advisable to scrutinize very keenly the action of the limbs. There is often a rigid movement observable; and much also will depend upon the obliquity of the pasterns, as to the impairment or otherwise in the action of an animal having these diseases.

It is the practice of veterinarians to pass a horse as being sound when he is not actually lame. The state of the law with regard to windgalls, as they are termed, is about the same as in every other affection—most ambiguous, leaving everything to the opinions formed by those supposed to be capable of advancing them. Oliphant writes as follows:—"There are few horses perfectly free from windgalls, but they do not interfere with the action of the fetlock, or cause lameness, except when they are numerous or large. In an action which was brought on the warranty of a horse, the breach of which was windgalls, a verdict was found for the plaintiff. The windgalls had probably produced lameness, as there appeared not to have been any dispute about the *unsoundness*,

but only about the form of action." I must confess this quotation is not characterized by its lucidity. It states, in the first place, "there are few horses perfectly free from windgalls, but they do not interfere with the action of the fetlock or cause lameness;" secondly, plaintiff gained a verdict; "there was no dispute about the unsoundness, but only about the form of action." Whether the impairment of action was caused by this disease it does not state, but it must be presumed such is the meaning of it. It may be inferred that by far the great majority suffering from these tumefied sacs are what must or ought to be termed practically or usefully sound; and taking the meaning of the word sound as given by the learned judges of Great Britain, no horse with bursal disease is a sound one, but for all practical purposes he is so.

A NOVEL AND INTERESTING CASE.

BY F. DUCK, M.R.C.V.S., ARMY VETERINARY DEPARTMENT, ALDERSHOT.

MAY 17.—On my return home about 3 p.m., I received a message from a neighbour, asking me to look at a cart-horse that had met with a serious accident.

History of Case.—The owner informed me that the horse, an aged gelding, had fallen into an old, narrow well about 9 a.m. The well had been forgotten, as it was close to the edge of the field, under a tree, and overgrown with grass. With great difficulty, by means of pulleys and tackle, the horse was extricated and laid on the ground. After this the animal was unable to rise, and seemed to have lost the use of the hind-quarters. Repeated attempts were made to get him up; poles had been passed underneath the body and every assistance given, but without effect.

I found the animal lying quietly on the off-side, having been down over six hours. He could move the fore part of the body freely, but the hind part seemed helpless, and there was involuntary dribbling of urine. I requested that another attempt to raise the horse should be made, and suggested that a strong sack should be passed under the body, etc. An old countryman, standing by, proposed another plan, viz., to get four men with four hop poles (strong poles, about 10 feet long), two men to stand on either side of the horse; as he struggled, to pass their poles underneath the body, and thus lever him up. The horse was soon on his legs, the body supported by the four cross poles. Friction was applied for some time over the loins and legs—first one hind leg was raised a little, then the other. The horse was now carefully moved on, the

crossed poles being still in position as a support. After a few steps dung was passed freely. The stable, about 150 yards off, was successfully reached, and, as soon as placed in his stall, the horse staled naturally.

The case is now doing very well, and I do not see why there should not be complete recovery.

I believe that if I had seen the case in the morning I should have diagnosed broken back, and recommended destruction.

Moral.—Do not give a hasty opinion.

SCLEROUS MYOCARDITIS IN CAMELS.

BY RICHARD W. BURKE, M.R.C.V.S., A.V.D., CAWNPORE.

UNDER the above heading, I have to describe what proved a source of great annoyance among Government camels at the transport station of Cawnpore, towards the latter end of 1885 and beginning of this year. The patients were seized with Dyspnœa—"gasping for breath"—tossing of the head and general restlessness, and evinced more or less pain on pressure to the ribs on the near side. As a rule, most animals rolled over to the near side before death.

The disease was witnessed principally in young camels apparently in good health (although old ones were not exempt), was not preceded by any symptoms, and caused sudden death.

Necropsy: The heart was found more or less enlarged and dilated; its muscular walls were swollen in appearance and flaccid to the feel, in a few cases presenting extensive rupture, with extravasation into the pericardium. The muscular changes of the heart were, as a rule, universal in character, and not confined to any one portion or portions of its walls, which, examined on section, after hardening, appeared to be made up for the most part of muscular fasciculi, having a newly-formed fibrous or fibro-gelatinous tissue developed between, which readily stained with carmine, and gave the appearance presented in the disease of heart in man known as "Rapid Cirrhosis."

FIBROUS POLYPUS IN THE BLADDER OF A MARE.

BY T. MARRIOTT, M.R.C.V.S., A.V.D., JULLUNDUR.

WHEN marching with G/4, R.A., from the Delhi Camp of Exercise to Allahabad, my attention was called to a mare said to be suffering from eversion of the bladder. On examination I found a small

pear-shaped, fleshy mass protruding from the vulva; micturition was suppressed, and, on dividing the lips of the vulva, showed a somewhat constricted portion connected with the mass, and communicating through the meatus urinarius with the interior of the bladder. I attempted reduction, and, by means of the catheter, drew off a fair quantity of urine.

The following morning after the march, the mass was again protruding, and was reduced as before. On arrival at Cawnpore, I consulted with Mr. Burke, A.V.D., and on examination we noticed that, owing to the elasticity and growth of the pedicle, the mass could be withdrawn at least three or four inches outside the vulva, and replaced in the bladder with a little manipulation. Our diagnosis was *Fibrous Polypus*, and operation was decided on. The pedicle was ligatured at the meatus urinarius, and the tumour removed. No further treatment of any kind was pursued, and the animal has done well ever since. Subsequent examination of the structure of the tumour confirmed our diagnosis.

As I do not remember to have seen a case of Fibrous Polypus of the bladder in our animals, I forward a short description of the above for publication.

CHARLIER SHOES IN INDIA.

BY T. MARRIOTT, M.R.C.V.S., A.V.D., JUBBULPORE.

THIS kind of shoe is only used in a very few cases, but from recent experience I think it deserves a more extended trial, not only in the Royal Regiment of Artillery, but in British and native cavalry regiments.

My first experience of the advantages derived from Charlier shoeing in this country occurred on the line of march from Allahabad to Delhi. The route taken was the Grand Trunk Road, which extends from Calcutta to Peshawur. This road is made of "kunkur"; the absence of loose metal, together with the splendid state in which it is kept, reflects great credit on all the officials connected therewith, and in a great measure induced me to give Charlier shoeing a trial.

The animal experimented upon was a well-grown young Waler mare. This mare had lately been treated for "capped elbow"; there still remained an enlargement and induration of the subcutaneous tissue of the part, and although the shoeing had been altered, no improvement followed. To go unshod would scarcely

suit a battery horse, therefore I determined to give Charlier shoeing a trial.

On November 18th, 1885, a pair of shoes of the above pattern were put on the fore-feet, and, needless to say, the following day this mare, like almost every other, accustomed only to crust pressure, went a little tender. This tenderness soon passed off, and on the 20th no difference in gait could be detected.

Shortly afterwards, owing to remounts being put to work, some of the horses were re-teamed, and, unfortunately, this mare was shifted from the riding centre to the riding wheel of a gun-team.

Wheel-horses are generally shod with heavier shoes, but as the capped elbow in this case was decreasing in size, I allowed these light shoes to remain on, thinking they would just, and hardly, last the regulation period—viz., one calendar month.

On examination of the shoes (18th December), I found they were scarcely worn at all, and did not require removing, whereas the hind shoes had to be replaced by new ones. Again, on examination (18th January), with the exception of one broken nail, the fore shoes did not require removing, fitting the foot fairly well. The hind shoes had to be renewed.

The shoes were now examined daily, as I wished to prove how long they would wear. On the 14th February, during a long march, one of the fore shoes was broken, and the same day both were renewed.

During this time the shoes were in constant wear, marching all through the manœuvres at the Delhi Camp of Exercise and the return march to Allahabad, and the distance travelled in the eighty-eight days was eight hundred miles. This alone, I think, speaks very favourably for Charlier shoeing.

The "capped elbow" has disappeared, and the mare has feet in every respect all that could be required. The most remarkable point is the length of time the shoes remained on the feet without becoming overshot by the wall, which is generally the case with heavy shoes. Of course I am aware that Charlier shoes cannot be used for all horses and in all countries; nevertheless, for army horses in India I believe ninety per cent. could be shod in this manner. Even the regulation mode of shoeing cannot be carried out without exception, neither can any hard-and-fast rule be followed for every horse.

A few of the advantages of Charlier shoes in the army would be —less iron required, less labour, less serious injuries from kicks, fewer cases of contracted heels, thrush, and, probably, corns; shoes would wear longer, and, above all, less weight would have to be carried or drawn about the country.

This last sentence, to the civil practitioner, will doubtless appear of trivial importance, but the army veterinary surgeon will, perhaps, think differently. The difference in weight between heavy and light shoes is not a great deal, but when we take into consideration the store shoes, the large bars of iron for making shoes, large anvils and tools required for making heavy shoes, and compare them with light shoes, iron, and tools, the difference between the weight (also bulk) would be more than any one would at first suppose.

The mounted soldier, proceeding on service, with his sword, carbine, haversack, water-bottle, mess-tin, shoe-pockets, wallets, cloak, blankets, picket-pegs, etc., etc., seated on a heavy military saddle, has frequently been called a "blooming Christmas-tree," being decked out with these sundry articles. With this enormous weight to carry throughout a campaign, it is no wonder that many horses are unable to pull through, and those that return seldom have any condition to spare. Now, if we can reduce the weight or bulk (if only a little) with advantage, surely we should not hesitate to bring the matter forward?

Before closing, I should like to say a few words about the shoeing of Bengal cavalry regiments. The sowar (native cavalry soldier) is obliged to keep his own horse shod, and for that purpose nalbunds (native shoeing-smiths) are employed in the regiment. The shoes (native-made) are fitted cold; the old shoe is removed, the sole scarcely touched with the rasp, the new shoes put on, too small all round—sometimes half an inch too far under the hoof—the point of the nail (instead of being removed, and the clench properly finished) is just curled round and allowed to remain on. The foot is now placed upon a small block, and the overhanging horn is chopped off to fit the shoe. Naturally, several horses are lamed from shoeing, and the majority of them have feet in every shape and form but the right ones.

Perhaps you will think me very hard on the natives of India; but, to speak fairly, some kinds of work they do remarkably well, though shoeing horses seems quite out of their power, except natives trained for a long, long time in a battery or regimental forge.

Editorial.

THE SUPPRESSION OF CONTAGIOUS DISEASES.

It is a matter for congratulation that a Bill has just received the assent of the Legislature to amend the Contagious Diseases (Animals) Act of 1878, as it simplifies some points in that Act, and gives more power and scope in the direction of suppressing transmissible diseases of animals, and will therefore be more beneficial in dealing with them.

A very noteworthy alteration is the definition of animals, which is now made to comprise any kind of four-footed beasts, in addition to the animals mentioned in the said Act. This will admit of Rabies being dealt with in a general and effective manner, instead of the unreasonable and, indeed, farcical way with which we are unfortunately so familiar. The inspection of dairies and cowsheds will also be on a better footing than heretofore, and it is to be hoped they will be placed under the supervision of fully-competent members of the Royal College of Veterinary Surgeons, by whom alone can inspection of them be thoroughly and reliably conducted.

The Privy Council also reserves the power to make orders for directing and authorising the destruction (or slaughter) by local authorities, either generally or in particular instances, of animals affected with contagious diseases other than Cattle Plague. This power will, we trust, be exerted towards the extinction of Tuberculosis in bovines—a scourge, perhaps, more serious than Contagious Pleuro-pneumonia, as well as other communicable disorders of this and other species not hitherto dealt with.

The veterinary branch of the Agricultural Department of the Privy Council deserves, and, we hope, will receive, ample recognition for what it has already done in the way of "stamping out" and protecting the country from diseases which are simply ruinous to any land they invade. With the greatly extended powers this branch now possesses, we may live to see these maladies, if not quite extinct in the three kingdoms, at least all but unknown.

Perhaps it looks ungrateful to find fault, but in making the amended Act applicable to all four-footed beasts it should have been remembered that certain two-footed beasts (we, of course, exclude the *genus homo*) are sometimes almost exterminated by contagious disease—fowls, to wit, with which the so-called "Fowl Cholera," for instance, plays sad havoc now and then.

ETHERISATION.

A DANISH process for producing anæsthesia *per rectum*, perfected by M. Cagny by the addition of a salt of morphia introduced subcutaneously. The process is said to be simple, and to enable the operation to be carried out the following articles are required: a glass tube, having a comparatively large surface for a small capacity, length 12 to 14 centimetres, diameter 1 to 1½ centimetres, to which is attached a caoutchouc tube from 15 to 20 centimetres in length, ending in a canule of wood or bone. The glass tube is filled with

ether and the canule introduced into the rectum; the tube containing the ether is then plunged into a vessel filled with about a litre of boiling water, which quickly causes it to volatilise and to penetrate into the intestine in the form of vapour; at the expiration of two or three minutes, the odour of the ether is perceived both at the nose and mouth of the animal operated upon. The glass tube can be charged as many times as may be found necessary. By employing warm water at a temperature of 50° or 60° C., and not boiling water, one obtains the same result with a smaller amount of ether, but with a greater expenditure of time; under ordinary conditions, it would appear advantageous to employ the more rapid process, as thereby torpidity is immediately produced, which renders the animal more easily susceptible to the full effect of the anæsthetic.

The operation can be performed with the patient standing, which is a great advantage when foals have to be dealt with, for in their case it is often a matter of considerable difficulty to adjust the hobbles before casting; but etherisation, once established, renders the colt innocuous to handling.

After the administration (ebullition) of the ether, one observes the following: expulsion of gas by the rectum, with the passage of fæces a little later; the odour of the drug makes itself known at the mouth; the conjunctiva is slightly injected; the pulse full, firm; the skin hot and supple, the muscles soft, the eyelids semi-closed—the animal being asleep, although a loud noise arouses it for a second; sensibility is diminished, and retarded in its manifestations—*e.g.*, pricking the skin causes a feeble movement after the lapse of some few instants.

To produce anæsthesia 50 grammes of ether are required. Torpidity being thus established, it is further increased by the subcutaneous injection of morphine, and at the same time the ordinary method of etherisation *per nares* can be persevered in when the animal is cast and it is desired to keep up a prolonged action. The dose of chloro-hydrate or acelate of morphia employed is from 15 to 20 centigrammes.

What are the practical results obtained from this method of procedure? The effects noted depend to some extent upon the temperature at the moment of operating, as well as upon the constitution of the animal undergoing the process of etherisation. With horses of ordinary temperament an almost complete anæsthesia supervenes, but in those of a plethoric tendency torpidity rather than anæsthesia is produced. If the weather is cold, the effect is not so marked as when it is warm, cloudy (humid), or stormy; and, further, if one operates in the neighbourhood of a forge, the animal is awakened at every moment, and the result is far less complete than when operated upon away from such disturbing influences.

The patient, once thrown, does not struggle to any great extent; those violent muscular contractions ordinarily seen, and which are much to be dreaded, being completely absent. Sensibility is so much diminished that, on cutting through the skin of the scrotum, for example, the horse takes little or no notice, and the other details of this and kindred operations are much facilitated; it is further claimed that the colicky pains often supervening upon castration by the ordinary method are never met with in the "etherised" subject.

This process can also be advantageously employed with dogs, either alone or combined with the hypodermic injection of a salt of morphia, for the more successful carrying out of operations. As in the horse, it is necessary to take into consideration the external temperature as well as the condition of the animal, its nervous excitability, its state of suffering, and so on. Contrary to that which occurs in the horse, its first action is characterised by slight excitation—*e.g.*, if one exhibits some 5 or 10 grammes only, according to the size

of the dog, it will appear anxious and troubled, and if let loose will run about hither and thither. It is said that the human subject, when under the influence of this process, experiences the taste of ether in the mouth; there must be something of the kind also in dogs, as they make very manifest indications of swallowing. When etherised, all operations can be performed without causing any sensation of suffering whatsoever.

Etherisation has one drawback if practised upon cattle—viz., that they cannot be used for consumption, should the operation not terminate successfully, as the meat would have a distinct flavour of the drug.

It can be employed with advantage for castration in the pig; a dose of 30 grammes of ether and the injection of 20 centigrammes of acetate of morphia completely disarming the animal of its usual powers of resistance.

Treatment of Colic—Etherisation and Alkaloids.

In connection with etherisation producing anæsthesia, one is led to consider the effects of the process in the treatment of Colic; for, as has been remarked, immediately succeeding the volatilisation of the ether in the rectum, one observes a slight sweating, followed first by the expulsion of gas, and then by the passage of fæces. In practice, colics can be divided into two groups—viz., those comprising the fatal colics (volvulus, invagination, laceration, etc.), and those which are usually curable. It is for the latter that this process can be recommended; the ordinary treatment, consisting of enemata, frictions, exhibition of draughts, being sometimes difficult of application.

Friction with essence of turpentine has the drawback of replacing one form of suffering by another, and, further, it is not always an easy matter for the country practitioner to give draughts and clysters by the aid of an indifferent light, once darkness has set in, with labourers as assistants, already fatigued by the work of the day. Enemata are relatively easy to administer, but their therapeutic action is somewhat doubtful, and not altogether efficacious. Instead of these, it is proposed to volatilise in the rectum 50 to 100 grammes of ether, by the process already described, which, it is affirmed, produces promptly a diminution of the suffering experienced; for, it must be remembered, the greater the pain the more rapidly is the animal brought under the influence of the vapour. This treatment can further be supplemented by the ordinary methods usually in vogue, although in mild cases this is quite unnecessary.

Speaking of the symptoms of Colic, one can establish two divisions: in the first the pains are severe, and show themselves in a particular manner, the horse throwing itself down with violence, together with a peculiar twisting of the hind quarters—these are, beyond a doubt, the symptoms of intestinal congestion, vulgarly "Gripes"; in the second division the pains are less violent, the horse lying down with care and scraping the ground usually with one or other of the fore-legs. The same method of treatment is hardly indicated in these two cases. In intestinal congestions M. Cagny employs more particularly subcutaneous injections of morphia, the dose being from 20 to 50 centigrammes of the acetate or chloro-hydrate, followed by the abstraction of blood, should this be deemed expedient; this treatment being secondary to the "etherisation" of the patient. In the second division there is nearly always flatulency with indigestion, and the method pursued after first producing semi-anæsthesia by the aid of the volatilised ether is the hypodermic injection of veratrine (25 centigrammes), sulphate of eserine, or hydrochlorate of pilocarpine (10 centigrammes). One notices the expulsion of gas and excrements, and a complete suspension of suffering, to follow this treatment,

the animal lying down and sleeping for an hour or so together. A great advantage claimed from the adoption of the foregoing measures is, that if a marked amelioration does not quickly succeed their employment, one may safely be convinced of the existence of some fatal and incurable lesion.

E. E. BENNETT, V.S., A.V.D.

THE MICROBE OF RABIES.

PRELIMINARY NOTICE.

BY G. F. DOWDESWELL, M.A., F.L.S., ETC.

IN view of the great interest now taken in this subject in consequence of the brilliant investigations of Pasteur, I think it desirable to take an early opportunity of stating that I have found the microbe which appears clearly to constitute the virus of this disease. It is a micrococcus, not very minute, and of the usual form. It stains, however, with some difficulty; and this accounts for its having hitherto escaped observation. In the cases of dogs which I have as yet examined, its principal seat is evidently the central canal of the spinal cord and medulla oblongata; thence it pervades the other tissues of the central nervous system, occurring (sometimes in vast masses) around the walls of the bloodvessels, and in some cases within the vessels amongst the red blood-corpuscles. In the cortex of the hemispheres I have found it, but in very small numbers, and, so far, only in the perivascular and peri-cellular lymph spaces. In the cerebellum I have not found it at all, neither have I as yet succeeded in finding it in the salivary glands. I shall shortly publish the methods by which it may be stained with certainty. I must, however, state that it does not stain by hæmatoxylin, either with or without a mordant, as asserted by Fol. I have repeated his methods carefully. Neither does it occur within the nerve fibres, as he states; and, lastly, it is fully three times the dimensions which he gives. I may add that it does not occur in the same situation, treated by the same methods, in normal animals. In the one case of a rabid dog, which I had examined to control my previous observations, the tissues were placed in alcohol so shortly after death as to preclude the possibility of the occurrence of septic organisms. In addition to which, all saprophytes, as far as yet observed, stain very readily with the usual aniline dyes, which this microbe does not. I must point out, in justice to the genius of Pasteur, that these observations on the occurrence of the microbe go far to confirm his statement of the seat of the virus; it may further afford a means of diagnosis in any doubtful case.

Preparations of the microbe were shown at the meeting of the Royal Microscopical Society on the 9th June.

The Brown Institution.

PASTEUR AND HIS WORK, FROM AN AGRICULTURAL AND VETERINARY POINT OF VIEW.*

BY GEORGE FLEMING, LL.D., F.R C.V.S., PRINCIPAL VETERINARY SURGEON OF THE ARMY.

AGRICULTURE, in the widest and most comprehensive sense of the term, depends upon so many collateral sciences, as well as arts, for its continuous prosperity and progressive development, that any marked advancement or important discovery in these must react more or less beneficially upon it, and promote to a commensurate extent, its welfare. Among the sciences which, for many years, have aided in this direction, perhaps it is not too much to

* From the "Journal of the Royal Agricultural Society."

claim for Chemistry a very forward, if not the foremost, place ; and among the greatest chemists are those who have devoted at least a portion of their skill and time to the study of what has been termed "Agricultural Chemistry." The chemical composition of soils in relation to the food, growth, and health of plants ; the food, feeding, and products of certain animals, as well as the preparation and preservation of many of those products for the use of man ; the action of the atmosphere, heat, light, and moisture upon plants and animals ; the artificial agents which may be made to second the efforts or supplement the exhausted powers of nature, whether in regard to the soil, the plant, or the animal body—in all these, and in other ways, chemistry has lent its powerful assistance to agricultural requirements, and it may truly be said that, without it, Agriculture would lose one of its best benefactors and most worthy helpmates.

In recent years, the science of Biology has also been bestowing more and more of its favours on Agriculture, and is now pushing Chemistry very hard for the first place in respect to the services it can render the oldest of all the arts, and more especially with regard to the elucidation of the problems which surround plant and animal life, be that life in a normal or abnormal condition. And here, in mentioning biology, it is impossible to refrain from alluding to the vastly important and wonderful discoveries which have, within half a century, been made through the intelligent employment of, first, the simple, then of the compound microscope. So recently is the date of its most startling revelations, that I myself can remember a rather distinguished Professor of Medicine, not a quarter of a century ago, designating it a scientific toy, and deriding those who, as he expressed it, wasted their time and their eyes in foolishness. This optical instrument is now far more essential to the man of science, and to mankind in general, than the telescope ; inasmuch as it reveals to us the presence of the infinitely little—myriads of minute plants and animals, strange organisms and delicate structures—which, until it was employed, were beyond the vision and the knowledge of man, all of which take a part in Nature's work, and many of which have a markedly benignant or malignant *rôle* in the vital operations of the higher plants and animals, they being active agents in the metamorphoses of matter—be it living or dead.

With the introduction of the microscope into biological investigation a new world in which to make grand conquests has been given to the philosopher and the searcher into life's mysteries ; the mysterious phenomena of life and death, growth and decay, building up and breaking down, and even the result of what were supposed to be purely chemical processes, are now within the range of man's scrutiny, and can be ascribed more or less to the operation of the impalpable, and hitherto invisible organisms, the existence of which this optical "toy" has now made us cognisant of. Even "the pestilence which walketh in darkness," destroying man and beast, has been robbed of its mystery by the penetrating light which this ingenious combination of lenses and optical accessories has shed upon it ; and man may, by its aid, in time protect himself, and the animals and plants he rears, from disease and destruction, by the knowledge he has thus acquired. Indeed, to some extent, this most desirable end has been already achieved ; for some diseases, the nature of which was unknown, and in the prevention or cure of which we were simply groping in the dark, are now perfectly understood, and their prevention is based on this understanding ; while we are able to make their active cause serve as a protective influence—make, in fact, the bane act as its own antidote—and thus obviate the necessity for resorting to uncertain, oftentimes dangerous, and generally onerous attempts at curing. No greater advance has perhaps ever been made in the medicine of man and animals, than that which has taken place during this half of the nineteenth century ;

and to none among those who have contributed to this result is more credit due than to Louis Pasteur, by whom the greatest discoveries in the world of microscopic organisms have been made, the solution of intensely intricate and important problems effected, and the verities of nature—in her darkest and most baffling recesses—demonstrated in a manner which only genius of the highest order could suggest and execute.

It is only too often felt by those who strive to win Nature's secrets, that all the great problems in natural science –such as the nature of heat, of light, of electricity, of gravity—and still more, all questions connected with life, bring us in the end, and frequently after but a few steps, face to face with infinity and mystery. It has been Pasteur's happy lot to select, or rather to be compelled by destiny to follow, a course which has led to such grand achievements, and at every stage of which he has left his indelible and character-mark. His progress has been along the path which has been already trodden by men of great genius, and pursued unfalteringly through weary days and nights, but along which the love of truth burns as a pure and a guiding light —that *lumen siccum* which Bacon insisted should be found in all philosophers, and which, it would seem, neither failure nor disappointment can quench or dim. As a representative of modern science, Pasteur occupies an advanced position. Cicero has somewhere said, "Opinionem commenta delet dies, naturæ judicia confirmat;" and Pasteur in his work appears ever to have borne in mind that speculative opinions have but an ephemeral duration, whilst inferences drawn from nature and truth remain permanently on record.

Originally a chemist, by the force of circumstances and a most fortunate concurrence of events, this most distinguished man became a biologist, and finally a pathologist—startling chemists, physicists, crystallographers, and physicians, no less than agriculturists, with his discoveries, and conferring upon civilisation immediate and inestimable benefits in many directions, while opening up a wide region for the fruitful cultivation of other investigators.

However far-extending and diverse the effects of these discoveries may be, and are, the object of this paper is limited chiefly to a survey of their relations to and influence upon Agriculture, and to a notice of the circumstances and conditions under which they were made, and the benefits likely to accrue from them.

I have stated that Pasteur was originally a chemist; but it may be mentioned that his training in this science was conducted by Dumas at the Sorbonne, and by Balard at the Ecole Normale, Paris, under whom he became a very competent experimentalist. During his studies in chemistry, molecular physics appear to have proved very attractive to him, and at last to have deeply engaged his attention, the molecular condition of crystals forming the chief object of his investigations. The results arrived at in his inquiry, when only twenty-five years of age, into the symmetrical and unsymmetrical (or dissymmetrical) forms of salts apparently identical in chemical composition, were remarkable, and elicited the admiration of the chief authorities on this subject, and especially of the German chemist. Mitscherlich, who had failed to discover what Pasteur had succeeded in demonstrating, though he had devoted many years to it. The conclusion Pasteur came to was, that the unsymmetrical molecules of matter are produced by, or built up under, the influence of vital agencies, the symmetrical being characteristic of inorganic bodies, the two conditions being typical of the physical barrier that exists between organic and inorganic nature. This conclusion has, however, since been questioned, and Tyndall twenty years ago, in his "Fragments of Science," was inclined to maintain that "it is the compounding, in the organic world, of forces belonging equally to the inorganic that constitutes the mystery and the miracle of vitality."

It is very probable that had Pasteur continued to pursue his researches in chemistry and molecular physics, he would have attained special eminence, and these sciences would have greatly benefited. At the early age of thirty-two he was appointed Professor of Chemistry at Strasburg, and soon after (in 1854) was transferred to Lille, as Dean of the Faculty of Sciences in that town, where, for a time, he continued to labour, to verify, and to make deductions from theoretic views, until step by step he had discovered the startling connection that existed between his previous researches in chemistry and crystallographic physics, and the new and entirely unexpected results obtained in physiological chemistry—which connection finally led him, as if it were the thread of Ariadne,to his magnificent discoveries in pathology.

This series of successes was referred to by the celebrated Chevreul at the Academy of Sciences some time ago, when he said : "It is by the first examining in their chronological origin the investigations of M. Pasteur, and then considering them as a whole, that we are enabled to appreciate the rigour of judgment of that learned man in forming his conclusions, and the perspicacity of a mind which, strong in the truths which it has already discovered, is carried forward to the establishment of new ones."

What might have been considered an accident, led Pasteur to abandon his hitherto congenial and highly successful line of research in the domain of chemistry and molecular physics, and enter upon a new but not very dissimilar course, in which his great natural gifts and previous training were to confer such advantages. This was the very important study of fermentation, to which his mind was attracted by an almost casual incident while he was at Strasburg.

The observations of a manufacturer of chemicals in Germany had long made it known that the impure tartrate of lime of commerce, if contaminated with organic matters, and allowed to remain dissolved in water during warm weather, fermented, and yielded various products. This excited Pasteur's curiosity, and he prepared some pure right-handed tartrate of ammonia,* to which he added some albuminous matter, and placed the liquid in a warm chamber, where it fermented. During the process of fermentation, the previously limpid mixture gradually became turbid, and the turbidity was found to be due to the presence and multiplication of a microscopic fungus, which, obtaining its sustenance in the liquid, acted as a living ferment.

To the paratartrate of ammonia this mode of fermentation was also applied successfully, the same organism appearing, though there was a wide difference between the results of the two fermentations, so far as the products were concerned ; and the important fact was established, that the molecular dissymmetry proper to organic matters intervened in a phenomenon of the physiological order, and did so as a modifier of chemical affinity. The little fungus was able to assimilate the right-handed tartrate more readily than the left, though there was no chemical difference between them—only a difference in molecular constitution. Pasteur was, in this way, the first to introduce into physiological consideration the fact of the influence of the molecular dissymmetry of natural organic products, and in demonstrating that the common mould or mildew could live and multiply on a purely mineral soil, such as the phosphates of potash, of magnesia, and an ammoniacal salt of an organic acid. Sowing the seeds of this mould—*Penicillium glaucum*—in a solution of pure paratartrate of ammonia, it was seen that in germination the left-handed acid appeared in proportion as the right-handed disappeared, the only aliment the plant obtained for its growth being the carbon in the tartaric acid.

* A salt which turns the plane of polarised light to the right ; there is also a left-handed tartrate of ammonia.

These remarkable experiments led Pasteur to infer that ferments were always living organisms, what had previously been looked upon as ferments being merely their food. The yeast-plant had been previously discovered by Leuwenhoeck in Holland, Schwann in Germany, and Cagniard-Latour in France; but its real function was not known, and the chemists proclaimed fermentation to be a purely chemical process. The experiments made by Gay-Lussac at the commencement of this century, seemed to them to prove that the oxygen of the air was the *primum movens* in the process; and Liebig, in promulgating this theory, stated that "the ferments are all nitrogenous substances—albumen, fibrine, casein; or the liquids which contain them, as milk, blood, urine—in a state of alteration which they undergo in contact with the air."

The oxygen was the prime agent in breaking up the unstable union between the complex molecules of these substances, and causing a disturbance and transformation of their ultimate particles, resulting in the production of new compounds. Berzelius and Mitscherlich, however, explained the phenomena of fermentation in a different way—the process was one of *catalysis*—the ferment took nothing from, nor did it add anything to, the fermentable matter, and was an albuminoid substance possessing a catalytic force which enabled it to act by its mere presence or contact. Dumas, nevertheless, thought that in the budding of the yeast-cells there should be some clue to the phenomenon of fermentation, as Cagniard-Latour had already surmised in studying the development of the yeast-plant during the metamorphosis of sugar in water. But until Pasteur took up the subject, it was not in any way or anywhere an accepted hypothesis that organisation or life had any influence on the process.

Pasteur's translation to Lille gave the stimulus to the train of thought engendered by the strangeness of the phenomena he had witnessed, in regard to the molecular dissymmetry of the two tartaric acids, and the effect of a microscopic organism upon them, for this had thrown a new light upon the mystery of fermentation. The wonderful part played by such a minute organism could not be an isolated fact, but beyond it there must lie some great general law. It was argued that all that lives must die, and all that is dead must be disintegrated, dissolved, or gasified; the elements which are the substratum of life must enter into new cycles of life. If things were otherwise, the matter of organised beings would encumber the surface of the earth, and the law of the perpetuity of life would be compromised by the gradual exhaustion of its materials. One grand phenomenon presides over this vast work—the phenomenon of fermentation. But this is only a word, and it suggests to the mind simply the internal movements which all organised matter manifests spontaneously after death, without the intervention of the hand of man. What is, then, the cause of the processes of fermentation, of putrefaction, and of slow combustion? How is the disappearance of the dead body, or of the fallen plant, to be accounted for? What is the explanation of the foaming of the must in the vintage-cask? of dough which, left to itself, rises and becomes sour? of milk, which curdles? of blood, which putrefies? of the heap of straw, which becomes manure? of dead leaves and plants buried in the earth, which are transformed into soil?

The attempts to solve the problem were numerous, but the hypotheses of the chemists were generally accepted, and Pasteur, being a chemist, might be supposed to favour one or other of these. Not so, however. The inductive method of study and research was his guiding star, and the experimental method of proving all things, was the touchstone of the verity of his inductions. "It is the glory of God to conceal a thing," said the wise Hebrew monarch; "but the honour of kings," he added, "is to search out a matter." Kings in the realms of science are for ever searching out the hidden things

which it is the glory of the Creator to conceal, and their discovery but adds to the glory of concealment.

Located in the principal town of the Département du Nord, one of the chief industries of which is the production of alcohol from grain and beet-root, Pasteur resolved to devote his attention to the study of fermentation, not only with a view to solving the problems in connection with it, but also to apply the knowledge gained to a useful purpose. He studied the spontaneous fermentation of milk (lactic fermentation), in which a portion of the sugar is transformed into lactic acid; and, as a consequence, he found himself opposed to the opinion of the few observers who, detecting living organisms in certain fermentations, imagined the presence of these was accidental, and instead of being favourable to the process, was really detrimental to it. He constantly found an extremely minute microscopical living organism, of well-defined form, consisting of little rods, constricted in the middle, and multiplying by dividing across (fission), each portion forming another rod, which soon underwent the same process of division, and so generation after generation of rods was quickly produced. Other inquirers had failed to observe this organism in the lactic fermentation, through imperfect manipulation and faulty preparation of the liquid: they having mixed chalk with the milk in order to keep it neutral, and employed various nitrogenous substances—all of which rendered it impossible to distinguish the ferment. Pasteur happily avoided this cause of error by boiling a little yeast in some water, filtering the liquid, dissolving in this some sugar, and then dropping carefully into it a minute quantity of fermenting milk, to act as the seed of the ferment in the limpid saccharine solution. Next day the pellucid fluid had become turbid, because of the active fermentation which had been commenced, and as the chalk dissolved a deposit took place which the microscope showed was composed of germinating rods of the organism just alluded to—the lactic ferment. In another experiment, he substituted for the yeast-water a clear decoction of nitrogenous matter, but the ferment invariably appeared in the same manner.

(*To be continued.*)

FELLOWSHIP DEGREE.

AT a meeting of the Examiners for the Fellowship Degree, held on the 18th June, the following members presented themselves for examination, and were successful in passing:—J. Penberthy, R.V. College; J. Malcolm, Birmingham; F. L. Gooch, Stamford; W. H. Kennedy, Wrexham; E. H. Leach, Newmarket; and J. B. Nisbet, Fence Houses.

NEW CLINICAL THERMOMETER.

MESSRS. ARNOLD AND SONS have introduced, for the use of medical men and veterinary surgeons, a new clinical metallic thermometer, which appears to be worthy of notice. It is constructed on the principle of the aneroid

barometer, is like a miniature silver watch, or toy-compass (A), and so small is it—about one inch in diameter—that it can be suspended to and worn at the

watch-chain. It marks the temperature by a needle very accurately on the dial-face, which, being covered with a strong crystal glass, is not easily damaged, nor is the instrument readily broken, like the ordinary thermometer.

For taking surface temperatures it should prove very useful, as well as in ascertaining that of stables, cow-sheds, and other places; while, to adapt it for taking the internal temperature of animals, it can be fitted to a whalebone, probe-shaped handle. This neat and ingenious little thermometer should find its application in veterinary practice; its portability, sensitiveness, and comparative immunity from breakage, certainly commend its use.

Reviews.

AN INTRODUCTION TO PRACTICAL BACTERIOLOGY, BASED UPON KOCH'S METHOD. By EDGAR M. CROOKSHANK, M.B., F.R.M.S. (London: H. K. Lewis. 1886.)

This work is one of the best of its kind we have seen. Its arrangement is methodical, and therefore easily understood. The author points out, in his introduction, that we must not only know how to recognise and artificially cultivate a bacterium associated with disease, but we must also endeavour to establish the exact relationship of the bacterium to the disease in question; and in order to ascertain this, he follows up the following postulates laid down by Koch, viz.:—

1. The micro-organisms must be found in the blood, lymph, or diseased tissues.
2. The organism must be isolated and cultivated outside the body.
3. The cultivated organism must produce the disease in question, when introduced into the body of a healthy animal.
4. The same organism must be found in the inoculated animal.

These the author follows up in his work by describing the appliances required, and the methods of examining liquids and tissues for these micro-organisms; then methods of isolating them, cultivating them; and, lastly, he describes the methods of carrying out experimental research.

Each section is accurately described, and most of the details illustrated by capital wood-cuts; whilst the illustrations of the various cultivations are well depicted by coloured plates.

The author is particular in pointing out the advantages of solid media over the fluid, for certain purposes. For instance, if a foreign organism happens to fall upon the gelatine from the air, it is *fixed* in that particular spot, where it develops individuals of its own species, which can be easily recognised from the special one under cultivation; whereas in liquid media they become mixed together and interfere considerably with the investigation. The author has also taken considerable pains to make what he calls the key to the success of Koch's method of cultivation—viz., "*Plate Cultivation*," clear to his readers.

There are several little details which at first sight might be thought superfluous, but we have no doubt the author has found in practice they

were wanted, and consequently introduced them; as failure in the cultivation and success by inoculation is often due to neglect of minute details, which often appear to be of little moment in carrying out experiments with these small forms of life. The classification and division of the organisms is good and simple. They are grouped into

1. Coccaceæ, having five genera.
2. Bacteriaceæ, with six genera.
3. Septotricheæ, with four genera.
4. Cladotricheæ, having one genus.

Each organism is separately described, when they are found, the action of various reagents on them, and their appearance under cultivation.

In the appendix a good description of yeasts and moulds, together with the methods of examining air, soil, and water, and a table showing the magnifying power of Zeiss's objectives, will be found; and the book is provided with a full and convenient index; in fact, it is all that can be desired as a book for the microbiologist up to the present date, and an invaluable work for those who wish to investigate disease from this point of view.

Lewis's Pocket Medical Vocabulary. (London: H. K. Lewis. 1886.)

To the busy practitioner, and still more to the veterinary student, this extremely concise vocabulary of medical terms can be sincerely recommended. We do not know of anything like it in this line—it is so complete, so tiny as to be truthfully designated a *pocket* vocabulary, and perfectly correct. For ready reference at the desk or elsewhere it should never be absent, as its diminutive size in no way interferes with its being printed in type so clear and legible as at once to catch the eye.

On the Fœtus in Utero, as Inoculating the Maternal with the Peculiarities of the Paternal Organism. By A. Harvey, M.A., M.D. (London: H. K. Lewis. 1886.)

This little work by the Emeritus professor of Materia Medica in the University of Aberdeen, and which is dedicated to Sir Andrew Clark, is a collection of five essays written in a philosophical spirit—four of them by Professor Harvey, and the fifth by his son, professor of Midwifery in the Medical College of Calcutta,—and contributed at different times to three Medical Journals. The subject, which, it is needless to remark, is ably discussed, is one of much importance to the breeders of animals, no less than to veterinary surgeons and medical men, and to these it offers much instructive and profitable information. To veterinary surgeons the work will be received with all the more pleasure and satisfaction, when they learn that the production of the three first essays was due to an article of great interest contributed to the *Aberdeen Journal* in 1849, by Mr. James Macgillivray, of Huntly, a member of the veterinary profession in Aberdeenshire, and a man who, for culture, originality of thought, and advanced medical knowledge, had scarcely his equal in the Northern world of medicine of those days, though, unfortunately, his name was scarcely known to his Southern colleagues.

"In that article," says the author in the introduction, "Mr. Macgillivray made it his business not merely to propound the theory of *Fœtal Inoculation*—the idea of which had independently suggested itself to his own mind—but to state also the grounds on which he advanced it. In his view, it is only on such a principle that certain phenomena arising out of cross-breeding can satisfactorily be accounted for—phenomena long familiar to persons engaged in the breeding of different kinds of animals." Struck with the novelty, as well as the reasonableness of the view presented in Mr. Macgillivray's article, and which was based on the intimate vascular connection existing between the fœtus and its parent, Dr. Harvey closely followed it out, making inquiries in regard to the subject in all quarters, among cattle breeders as well as among his professional brethren. Facts were in time collected, and the theory is now accepted as a law in physiology. Dr. Harvey generously confesses that for many years he has looked upon Mr. Macgillivray as entitled to the paternity "of this very beautiful theory. The idea of it was entirely original with him, and at the time he advanced it, it had no place in any of our physiological works, text-books, or records."

In the one hundred and forty pages which make up the book now before us, there is abundant food for reflection and facts to work upon, and we feel sure those of our readers who procure it will be as edified with the manner in which the subject is treated as with the matter itself.

A Manual of the Diseases of the Elephant, and of his Management and Uses. By J. H. Steel, M.R.C.V.S., Army Veterinary Department. (Madras: W. H. Moore. 1885.)

Within the last few years Indian veterinary literature has made most remarkable and creditable progress, and we are now for the first time learning something of that great country in a professional point of view.

The younger generation of army veterinary surgeons appears determined to make up for the lost or neglected opportunities of those who preceded them, and to cultivate to the best of their skill and strength, this magnificent field for pathological observation and research. In no other army in the world have veterinary officers such splendid opportunities for distinction, in increasing our knowledge of animal diseases and in contributing to anatomy, physiology, botany, and the other sciences, while practising their purely professional work. Among those who are availing themselves of their opportunities, and are doing good service to science, the veterinary profession, no less than to the State, the author of the excellent and unique work on the elephant, which has been sent us to review, occupies a foremost place.

This is the first of the Indian Veterinary Manuals which he is about to publish; and if the others are like it, there shall no longer be any reasonable ground for the complaint so long and so loudly made, that we know little or nothing of Indian animals and their diseases. The ponderous and curious beast, which is more utilised in our Indian Empire than in any other part of the world, is somewhat interesting from a natural history,

social, and veterinary point of view; and what Mr. Steel has to say about him in these different aspects affords much interesting reading, while furnishing most valuable information for those who have to manage and attend to the bulky creature in health and disease. Hitherto our knowledge of him has been almost *nil*, so far as his ailments, accidents, and management are concerned; but now, thanks to our author, those who require any information regarding him will find it in this manual, which has also some good illustrative plates. It is a work with which the Army Veterinary Department has good reason to be satisfied.

Army Veterinary Department.

AT the Levée held at St. James's Palace on May 30th, by command of the Queen, the following veterinary officers were presented to His Royal Highness the Prince of Wales by the Principal Veterinary Surgeon of the Army:—First-Class Veterinary Surgeons Hinge, Thomson, Berne, Duck, Poyser, J. Reilly, S. L. Pallin, and Veterinary Surgeon Sharp.

At the Levée held on June 25th, the Principal Veterinary Surgeon presented Mr. F. Raymond and Mr. Hagger, Army Veterinary Department.

The Annual Dinner of the Department was held at the Holborn Restaurant on June 11th. Dr. Fleming occupied the chair, and there were present Messrs. Sewell, Lambert, Marshall, Thomson, Oliver, Rostron, W. Pallin, Duck, Burt, S. L. Pallin, Queripel, Poyser, D. C. Pallin, F. Raymond, Philips, Savage, Cheesman, Kelly, Webb, Nunn, J. Reilly, M. Anderson, Jones, Flintoff, F. Smith, Forsdyke, Whitfield, Bennett. Mr. Caldecott was unable to be present through illness.

In consequence of the heavy mortality from "Horse-sickness," not only among Army horses and mules in Natal, but among those of the colonists also—thousands, it is reported, having been lost this season—on the representation of the Principal Veterinary Surgeon, it has been decided by the Horse Guards and War Office to send out a specially-trained veterinary officer to investigate the nature and origin of the disease by observation and experiment, and to try the effects of protective inoculation. This, if successful, will prove to be an immense boon to the colonists in Natal and the Cape, in both of which colonies this scourge commits heavy depredations, rendering some of the most fertile parts uninhabitable for horses during the summer season.

Inspecting Veterinary Surgeon W. Lamb, Bombay Veterinary Department, is permitted to retire from the Service from the 4th July, 1886, on a pension of £450 per annum, payable in England, subject to H.M.'s approval.

Obituary.

THE death is announced of Mr. J. Hanly, M.R.C.V.S., late of the Army Veterinary Department, who graduated in 1861.

In the *American Veterinary Review* we are apprised of the death of Mr. W. H. Lillyman, M.R.C.V.S., of Boston, U.S.A. That journal says, in referring to this event:—Mr. Lillyman was born in London on February 28th, 1820, and was apprenticed at the age of thirteen to a veterinary there. Later he entered the Veterinary College in the same city, graduating in 1840, at the age of twenty. He then went to Ireland, practising his profession in the

vicinity of Dublin for a few years, and came from there to America, landing here in 1846. He soon established himself in practice at Boston, Massachusetts, where he remained until his death, which occurred on May 15th, at the age of sixty-six years. He was, for thirteen years after his arrival at Boston, the only graduated veterinarian in the city, and for nearly forty years has attended to a very extensive practice throughout New England. He was a man noted for his independence of thought and originality of idea, and his profession was his idol. He enjoyed the reputation of being a skilful surgeon and a successful practitioner.

The death is also reported of Matthew Hedley, Darlington. He graduated 30th April, 1859.

Jurisprudence.

ALLEGED CARELESS SHOEING CASE AT DUDLEY.

ON the 1st inst., at Dudley County Court, before Judge Sir Rupert Kettle, William Harcourt, haulier, sued Joseph Timmins, farrier and shoeing-smith, for £12 15s., being the alleged value of a horse said to have been lost by the careless shoeing of one of defendant's men. Mr. Hooper was for the plaintiff and Mr. Waldron for the defendant.

Harcourt said he sent his horse to be shod, and ten days afterwards the animal fell lame. It was attended to, but became so bad that it was killed. The horse was pinched, and defendant's man was the cause of the injury.

Plaintiff was cross-examined at length as to the restlessness of the animal, and he said the horse had a habit of stamping.

The Judge examined the witness, and drew diagrams of a horse's foot—front, side, and under views. With the aid of these, the witness pointed out the position of the alleged offending nail and the direction it took.

His Honour, after the explanation, said his object was to get at the original place of Inflammation. He cared nothing about the after-formation of pus, and other matters spoken of in Court.

William Bruntnell, farrier, gave evidence to the effect that the horse had been pinched, and the Judge showed him the sketches, and he corroborated the theory of the nail being the cause of the mischief.

He was examined by Mr. Waldron as to the extent of his knowledge, but the Judge stopped the examination by remarking: "We know what he is, Mr. Waldron; he is a farrier, not a veterinary surgeon!"

Mr. Harvey Collett, veterinary surgeon, West Bromwich, said he had made an examination of the horse's hoof and found that the animal had been lamed by a nail penetrating to the quick.

Mr. John Thomas Chambers was in Court, and he gave evidence and was of opinion that the nail had penetrated the quick. He had seen the Judge's sketches, and, from the position of the nail, he was confirmed in his view.

Mr. Waldron, for the defence, put in a large piece of the horse's hoof, and urged that the animal had a habit of treading on the one foot with the other. There was a crack of considerable length on the coronet of the hoof, and this crack was full of hair, which had been forced in by the tread.

He called Mr. Abraham Green, veterinary surgeon, who made a *post-mortem* examination of the animal, and he described the above symptoms and signs. The mischief began at this coronet, and was produced by the tread.

His Honour attentively examined the hoof and the nail-hole, and at once gave a verdict for the defendant.

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS.

SPECIAL MEETING OF COUNCIL, HELD MAY 25TH, 1886.

J. ROALFE COX, ESQ., President, in the chair.

Present: Sir F. Fitzwygram, Bart.; Professors Duguid and Williams; Messrs. J. D. Barford, J. S. Carter, B. Cartledge, H. J. Cartwright, J. Roalfe Cox, E. C. Dray, Dr. G. Fleming, T. Greaves, M. J. Harpley, W. Mulvey, H. R. Perrins, H. L. Simpson, J. F. Simpson, P. Taylor, W. Whittle, W. Woods, and the Secretary.

Mr. DRAY proposed that the minutes be taken as read.

Mr. P. TAYLOR seconded the motion, which was agreed to.

The minutes were then signed by the President.

The SECRETARY stated that letters had been received from Messrs. Campbell, Pallin, and Walley, regretting their inability to attend the meeting.

Presentations to the Library.

The SECRETARY announced the following presentations:—"The Annual Report of the Agricultural Department, Privy Council Office, for 1885," by Professor Brown. "The Veterinary Report, Nile Expeditionary, Force," and Statistics showing return of Sick and Lame Animals, Army Veterinary Department, 1881-85; Report on the Army Veterinary Department with the Suakin Field Forces; Copy Correspondence with His Royal Highness the Field Marshal Commanding in Chief," by Dr. G. Fleming. "A Manual of the Diseases of the Elephant and of his Management and Uses," by Mr. J. H. Steel, A.V.D. "Quarterly Journals of Veterinary Science in India and Army Animal Management," edited by J. H. Steel and F. Smith, and presented by Mr. F. Smith. "Third Edition of Strangeway's Veterinary Anatomy," by Professor Vaughan. Also a photograph of Professor Simonds and a picture of Mr. Coleman.

Mr. DRAY proposed that the thanks of the Council be given to the donors.

Mr. CARTLEDGE seconded the motion, which was agreed to.

Reports.

The report of Fellowship Examination of the Royal College of Veterinary Surgeons recently held in Scotland was received; also the report of Examinations held in Scotland.

Correspondence.

Letters were read from gentlemen recently appointed Honorary Associates, and also from those elected as Fellows, thanking the Council for the honour conferred upon them, also a letter from Dr. Duncan, Ontario, thanking the College for his election.

A letter from Mr. Alfred Broad, on behalf of the Central Veterinary Medical Society, offering to present the Council with an additional memorial window to be placed in the centre window of the Council room.

Mr. BARFORD proposed that the best thanks of the Council should be given to the Society for their kind offer.

Mr. WHITTLE seconded the motion, which was agreed to.

Letters from several professors with reference to the election of Fellows, to be discussed at the next quarterly meeting.

The SECRETARY reported that in the case of a veterinary chemist, whose

conduct had been under consideration with respect to advertising, that gentleman had written promising to discontinue the advertisements.

Complaints had been received with reference to other persons, and the Council instructed the Secretary to write the usual notices.

Election of Officers.

The PRESIDENT said before inviting attention to the special business of the meeting, he had a duty to discharge at the close of his term of office, namely, to acknowledge the kind and cordial co-operation which he had received on the part of the members of Council, and which had rendered the performance of his duty both a pleasure and success. The Council would now proceed to the election of a President for the current year.

Mr. DRAY said it was a source of pleasure to him to have to propose a gentleman as President for the ensuing year. He was very glad to say that the services of the Royal College of Veterinary Surgeons, and of the profession at large, were now more recognised than they used to be, and this was attributable both to the manner in which the proceedings of the Council were carried on, and to the increased respectability of the members of the profession. If they wished this progress to continue it was most essential that they should select a gentleman of position, of ability, and possessing attainments of a very high order, as their President. Last year he had the honour of proposing Mr. Roalfe Cox as President, and that proposition received the full approval of the Council. He need not say how well Mr. Cox had fulfilled the duties of his office. For a President to have attended seventeen Committee meetings was unprecedented, and besides that, he had given much valuable time to the completion of that building. How could they best show their gratitude and appreciation to a gentleman who had given such extreme and diligent attention to the duties of his office? There could be but one answer, namely, to re-elect him. He therefore had very much pleasure in proposing Mr. Roalfe Cox as President, and he hoped that that would be unanimously agreed to.

Sir F. FITZWYGRAM said no one could object in the slightest degree to the re-election of Mr. Roalfe Cox; but still he thought it was desirable that, as a rule, the honours of the profession should be spread somewhat more widely, and that they should not, except under special circumstances, re-elect their President. They had one very old professor, namely, Professor McCall. He was the oldest teacher in any of their veterinary schools; he was a man of standing and of character, and had always been loyal to that body at a time when the other Scotch schools could not be said to be loyal. There would be a very great advantage in paying him the compliment of electing him, and his election would tend to cement that union between the Royal College and the different schools, which was an object of great importance, and which rather latterly had been somewhat strained with regard to the Scotch schools. Mr. Cox knew that he would gladly hail him as President, but it would be very desirable, on that particular occasion, to cement their union with the Scotch schools by electing their oldest Professor.

Mr. WHITTLE supported the proposal to elect Professor McCall, as it would be paying a compliment to the Scotch schools.

The PRESIDENT said the compliment which the Council had paid him during the past year was one which he highly appreciated, and his nomination for a second time was flattering in the extreme. At the same time he felt very reluctant to stand in the way of any gentleman with regard to an honour to which many might reasonably aspire, and he would therefore have very much pleasure in giving way to Professor McCall.

Mr. GREAVES said no one at that table would feel greater pleasure in seeing their present Chairman remain in that position for the next twelve months

than he should; but, looking at the matter as it had been placed before them by Sir Frederick Fitzwygram, and seeing that Professor McCall had always been loyal to the Council, he thought it was only due to him that they should confer the highest honour upon him by electing him to the Presidency.

No other names having been proposed, the Council proceeded to ballot for the President, with the following result, that Mr. J. Roalfe Cox was declared re-elected.

The PRESIDENT said he had of course to return thanks for the compliment they had paid him, but he must say he was disappointed in the result of the ballot, and was sorry that Professor McCall had not been elected. He would have withdrawn at first if he had not thought it would be more gratifying to Professor McCall to hear that he had been elected without any retirement on his (Mr. Cox's) part, and he should be extremely glad now if the matter could be reconsidered to allow time to withdraw in favour of Professor McCall. He knew how deservedly prominent he stood in the profession, and that a very large circle of practitioners, formerly his pupils, would have been very gratified to see him placed in that position. It would have given him great pleasure to have welcomed Professor McCall to that chair, and if there was the slightest possibility now, he should prefer to retire.

The Council then proceeded to the election of six Vice-Presidents. Messrs. J. F. Simpson, W. Woods, H. J. Cartwright, T. H. Simcocks, A. H. Santy, G. T. Brown, T. Briggs, F. Raymond, G. Elphick, and W. Wilson were nominated, and the ballot being taken, Messrs. Simpson, Woods, Cartwright, Simcocks, Santy, and Brown were elected.

The PRESIDENT proposed that Mr. E. C. Dray be re-elected Treasurer. To speak in praise of the qualifications of their excellent Treasurer was quite superfluous in that Council.

Mr. GREAVES seconded the nomination.

The ballot being taken, Mr. Dray was declared to be unanimously re-elected.

Mr. DRAY said he was very much obliged to the Council for again conferring this honour upon him. It was a great pleasure to know that he had given satisfaction, and he could assure them that his efforts would be continued with no diminished energy. He wished he was able to state that the building had been paid for without their having to come upon the general fund, and he would suggest whether another appeal should not be made to the profession. There were many who had not subscribed one penny, whilst others had been most liberal, particularly the members of the Council, who had not only given once, but twice. It was for the Council to consider whether at a future period they should not make another appeal.

The PRESIDENT said the next business was the election of the Secretary and Registrar. Perhaps no one in that room had reason to speak more highly of the qualifications of their Secretary as shown during the past year than himself. He was very pleased to propose the re-election of Mr. Hill to the offices of Secretary and Registrar.

Mr. E. C. DRAY was very glad to support the President in his proposition.

The ballot was then taken, and Mr. A. W. Hill was unanimously re-elected.

With regard to the Register, he wished to point out that members of Council would greatly assist the Registrar in his work if they would be good enough to send in the names of any members of the profession known to them who had died or changed their addresses, for alteration in the Register.

Professor WILLIAMS suggested that it would be a good plan if copies of the Register were sent to the Secretaries of the Associations or to a member of Council, so that they might be corrected. This would be a very great assistance to the Registrar.

Professor DUGUID said that if a proof copy were sent to the Privy Council Office, he could correct many of the addresses, especially of members of the profession who had removed and were re-appointed as Veterinary Inspectors in other districts.

The PRESIDENT said that copies should be sent as suggested.

Mr. HILL said he had to thank the Council for the honour of his re-election. He also desired to thank the President and members of Council for having so greatly helped him in his work during the year. He was very glad to hear what had been said with regard to the Register, because he had had to write to several gentlemen to say that he was unable to kill any one unless he had a Registrar's certificate or information from the relatives or from members of Council. He should be very happy to make any alteration in the Register that the Council saw fit to order.

The SECRETARY then reported the receipt of two letters from the Privy Council Office, showing that the action of the Council had been upheld and the appeals dismissed in the cases of Stephen Pettifer of Crudwell, and W. C. Robertson of the East-end of London. In both cases the Privy Council held that the appellants were not entitled to registration.

A hearty vote of thanks having been accorded to the Chairman, the Council adjourned.

SPECIAL MEETING OF COUNCIL, HELD JUNE 9TH, 1886.

Mr. J. F. SIMPSON, V.P., in the Chair.

There were present at the meeting the Chairman, Dr. Fleming, Professors Pritchard and Axe, and Messrs. E. C. Dray, B. Cartledge, H. L. Simpson, F. W. Wragg, Peter Taylor, A. H. Santy, J. Storrar, W. Whittle, T. Greaves, M. J. Harpley, H. Duguid, and the Secretary.

On the motion of Mr. DRAY, Mr. J. F. Simpson was voted to the chair.

The SECRETARY read the notice convening the meeting.

Mr. DRAY proposed that the minutes of the previous meeting be taken as read.

Mr. P. TAYLOR seconded the motion, which was agreed to.

Resignation of Mr. J. R. COX.

The CHAIRMAN announced that the Secretary was in possession of letters connected with the presidentship, and he proposed that they should be read.

Dr. FLEMING seconded the motion.

The resolution was agreed to.

The SECRETARY then read the following letter from the recently re-elected President, Mr. J. Roalfe Cox, and which he said had been addressed to him.

"27, Farm Street, Berkeley Square,
"*June 9th*, 1886.

"To A. W. HILL, Esq., Secretary Royal College of Veterinary Surgeons.

"MY DEAR SIR,—I regret to find it impossible for me to attend the Special Meeting of Council this afternoon. I am therefore writing to ask you please to invite the senior Vice-President, who may be present, to take the chair and conduct the business of the occasion, and I shall be much obliged to you if you will kindly read to the Council the following, which is in substance what I should have said had I been able to be present.

"I have always maintained that as a rule it is not desirable that the office

of President should be held beyond the customary period of one year, and the correctness of this view was confirmed by the vote of half the members present on the last occasion, as well as by the testimony of a gentleman who has himself served as President under the exceptional extension of term. I also feel that nothing less than the unanimous vote of the Council should justify departure from the usual course. I only acquiesced, allowing my own desire in the matter to be over-ruled on the assurance that my re-election had been pre-determined by the wish of the entire Council, and that I should not be placed in opposition to any candidate for the honour. Although I preferred not to be re-elected, and it would be personally inconvenient for me again to undertake the duties, I felt I could not persist in opposing the entreaty which was so generally pressed on me without seeming to be discourteous. I consider the division which determined my re-election is inconsistent with the principle I have advocated, and I am right in declining the honour of a further tenure as President. I therefore beg most respectfully to resign.

"In case you have not heard from Professor McCall on the subject, it may assist the Council if I state that I wrote to that gentleman asking him not now to offer any obstacle to his being elected as President, and the Council will learn from his letter in reply, which I enclose, that he is unable to accept the honour at this time. Therefore, the Council will proceed to elect a President, and amongst the many becoming highly eligible for this distinction, perhaps Professor Pritchard at this time is prominent in point of turn.

"Yours faithfully,

"J. ROALFE COX.

"P.S.—I desire my resignation to be final."

The SECRETARY inquired if it was the wish of the Council that Professor McCall's letter should be read.

Mr. GREAVES said he did not think it was essential to read it. He had received a copy of the letter, and could state that the pith of it was that Professor McCall found himself unable to accept the office of President.

The CHAIRMAN thought that if there was nothing of a private nature in the communication, it should be read.

The opinion being endorsed by the majority of the Council,

The SECRETARY read the letter, which is as follows :—

"83 and 85, Buccleugh Street, Garnet Hill, Glasgow,

"*May 28th*, 1886.

"DEAR MR. COX,—I received your favour yesterday, but I was called out of town, and did not get an opportunity to reply. I am very sorry indeed to learn that your re-election as President has not been unanimous in one sense, and that I was nominated in apparent opposition by General Sir F. Fitzwygram. In justice to all parties, allow me to say that I never had a conversation with Sir Frederick or Mr. Greaves regarding either your re-election or my own, and consequently they have acted in ignorance of my expressed wish that you should be re-elected, and that I should not be nominated at this time. If Sir Frederick, and those who voted for me as President, had been aware (and I am surprised that Professor Pritchard or Mr. Cartledge did not make them aware) of the understanding come to betwixt us, no doubt but that they would have gladly recorded their vote in your favour, and thus your election would have been unanimous ; but seeing that they did not, then I think that it would be wrong and an injustice to all parties to disturb the decision on the ground that your re-election was not unanimous. You really are unanimously re-elected, for those who did not record their vote in your favour did so in ignorance of the facts of the case. I pressed you

to allow yourself to be re-elected, as I thought, and still think, the interest you had displayed in the prosperity of the College, and in the discharge of all appertaining to the presidential duties, warranted that distinction at the hands of the Council, and I know that such was the unanimous opinion of all the members with whom I discussed the subject.

"Considering all circumstances, I think that the minutes should bear that your re-election was unanimous, and no mention should be made of my nomination; but, whatever be done, believe me that circumstances will not permit of my accepting the Presidentship at this time. I do not want the honour without performing the duties appertaining to the office, and placed as I am at present that is an impossibility.

"With kindest regards, and trusting that you may on further consideration view the matter in somewhat the same light as I do, and act in accordance therewith,

"I remain, yours very sincerely,
"JAMES MCCALL."

Dr. FLEMING said the Council had been placed in a dilemma on several occasions by the election of gentlemen to offices like this of President, who, at the last moment, were unwilling to serve, which he thought was most unfortunate. Before any gentleman was nominated it ought to be ascertained whether he was ready to accept the position. The irregularity had been very marked in the present case, for it was evident that Professor McCall was not prepared to serve. It had placed the Council in a very painful position, because he was quite sure that Mr. Cox would have accepted the Presidentship had the vote of the members been at all unanimous. It was to be extremely regretted that Mr. Cox had not seen his way to fill the office, but from the tone of his letter there seemed to be no chance of his reconsidering his determination, even if he were again elected. He (Dr. Fleming) thought the profession should know that it was excessively inconvenient, and even irregular, to nominate gentlemen to serve on the Council in any capacity without knowing that their nominees were prepared to act upon their election.

Mr. GREAVES thought that the resignation of the President should be accepted. They all respected him very much, but it was not in accordance with the dignity of the Council to force an honour upon a gentleman who did not desire it. He therefore had great pleasure in proposing, "That a cordial vote of thanks be passed to the President for the masterly and able manner in which he has conducted the business of the Royal College of Veterinary Surgeons during the last twelve months."

Mr. DRAY said that as Mr. Cox's decision appeared to be irrevocable, he was under the painful necessity of seconding Mr. Greaves's proposition. If Mr. Greaves would allow him he would suggest that the resolution should take the following form:—"Resolved, that the resignation of Mr. J. Roalfe Cox (the re-elected President of the Royal College of Veterinary Surgeons) be accepted with extreme regret by the Council, and they also express their deep obligations to Mr. J. Roalfe Cox for his assiduous attention to his duties during his Presidentship."

Mr. GREAVES having accepted the suggestion, the substituted motion was put, and unanimously agreed to.

It was also agreed that the letters from Mr. Cox and Professor McCall which had been read should be entered on the minutes.

Correspondence.

The SECRETARY announced the receipt of letters of regret at inability to attend the meeting from Professor Walley, and Messrs. Cartwright, Camp-

bell, Mulvey, and Barford. He also read the following letter which had been addressed to the Council:—

"Hayford House, 278, Kennington Park Road, S.E.,
"*June 7th*, 1886.

"GENTLEMEN,—At a meeting of veterinary surgeons held on the 4th inst. to take into consideration the operation of the Contagious Diseases (Animals) Act, a Committee was appointed to draw up a memorial upon the subject for presentation to the Metropolitan Board of Works; also that the Council of the Royal College of Veterinary Surgeons should be asked to allow the said Committee to meet at the Council Room, Red Lion Square, on the 21st inst. Your sanction would be esteemed a favour. On behalf of the Committee, I am, gentlemen,

"Yours, obediently,
"THOMAS SANGSTER, Chairman."

After a short discussion, during which Mr. WRAGG stated that he was a member of the Committee in question, it was agree that the use of the Committee Room of the College should be granted as desired.

The SECKETARY next stated that he had received letters from three Professors desiring to be enrolled as Fellows of the College.

At the suggestion of the Chairman the consideration of these applications was deferred until the quarterly meeting.

The next communication mentioned by the Secretary was a letter he had received from Mr. Cunningham asking for information as to the time occupied in sending out voting papers and appointing scrutineers, the cost of election, etc.

Mr. PETER TAYLOR: He is not a member of Council.

The SECRETARY: No.

The CHAIRMAN said that Mr. Cunningham could get every information he required from the Annual Report. The other details, however, he considered belonged exclusively to the Council, and ought not to be given

Ultimately it was left in the hands of the Secretary to reply as he thought best.

A letter from Professor Walley was next brought up, asking that the Council might fix the day for the next quarterly meeting.

It was decided, on the suggestion of the Chairman, that in future this decision should rest with the President. It was arranged that the quarterly meeting should be held on the 7th July.

The SECRETARY then laid before the Council some correspondence relating to registration. He said that, in answer to a note he had written to a registered practitioner—a canine veterinary surgeon—complaining of his use of the initials M.B.P.C. and R.V.C.S., he had received a letter from him through his solicitor apologising for his action, and stating that he had discontinued the use of the letters referred to.

The CHAIRMAN said that no further notice need be taken of the matter.

The SECRETARY said that in another case he had written to an individual calling himself a veterinary shoeing smith. He would report upon the result at the next meeting of the Council. He had received a complaint of a person named Archibald Chisholm, who carried on a "veterinary establishment." The word "veterinarian" was used contrary to the Veterinary Surgeons Act, but he (the Secretary) thought he could settle the matter without troubling the Council or law. He should like, however, to receive the directions of the Council as to an anonymous communication which had been addressed to him pointing out where the Veterinary Surgeons Act had been infringed in two instances.

The Council instructed the Secretary to take no notice of it.

The SECRETARY then informed the Council that he had written to Thomas Neave, who had been accused of stealing a coat, in order to see if the address he had given was correct, with a view of summoning him before the Council, but that the letter had returned marked "Not known," "Gone," "Left no address."

A Member said he knew him as going round amongst veterinary surgeons, from whom he got a shilling or two now and then.

Professor PRITCHARD thought he was not likely to do the profession any harm, and that therefore it was not worth while to interfere with him.

Mr. GREAVES was of the same opinion.

Mr. H. SIMPSON suggested that a summons should be sent to him registered, so that the rules of the College might be complied with.

Dr. FLEMING thought the case a very disgraceful one. He moved "That a registered letter, summoning Thomas Neave to attend a Council meeting to explain his conduct, be forwarded to his address, and that if he cannot be found, the Council will be justified in expunging his name from the register."

Mr. WHITTLE seconded the motion, which was agreed to.

The SECRETARY said he had received complaints of a Mr. George Allen, of Commercial Road, Limehouse, placing the initials V.S. after his name, though he was not registered. This appeared to be a good case for the legal adviser of the College.

The last item of correspondence referred to a Mr. T. Hargreaves, jun., of Manchester, who had advertised himself as a veterinary surgeon without being a qualified practitioner.

The SECRETARY stated that he had written to Mr. Hargreaves on the matter, and to at once withdraw the advertisement, but he was now informed that it had appeared again, but slightly modified, the word "junior" having been omitted, and the advertisement made to appear to be that of the father of Mr. Hargreaves, whose initial was also "T," and who was a member of the profession.

The Council instructed the Secretary to send to Mr. Hargreaves, jun., a further notice of his irregularity, and report the result at the next meeting.

Election of President.

The CHAIRMAN said that the next business was to elect a President, but before that was done he should like to make one or two remarks. They had been reminded of what had occurred at the last election of President, when Mr. Cox found himself in a position in which he (the Chairman) ventured to say he ought never to have been placed—(hear, hear)—for he maintained that the President of the College should be elected by the unanimous vote of the Council if he were to command their respect. He thought that many of them must have regretted, as he had done, that Sir Frederick Fitzwygram, who unfortunately was not sufficiently amongst his brother councillors to consult them as to the course he ought to adopt, did not take the precaution to ascertain, in the first place, the wishes of the gentleman whom he nominated, and, in the second place, that he did not confer with at least half a dozen of his colleagues in order to see whether there was a probability of his nominee being elected. (Hear, hear.) It would be remembered that amongst the reasons Sir Frederick Fitzwygram gave for his inability to support Mr. Cox were these: That Mr. Cox had already been President, and that the presidentship was an honour which should be conferred upon some one who had not already enjoyed the distinction. With all respect to Sir Frederick, he ventured to say that that was a remark which should have come from anybody but himself, inasmuch as it would be found recorded below the portrait of Sir Frederick, which adorned the Council-room, that he had served the

office of President for three successive years—1876, 1877, 1878. What he (the Chairman) would like the Council to do that day would be to elect unanimously the gentleman who should be appointed President. He had not the remotest idea how many candidates there were, but if it were known that more than one would be proposed, he would suggest that the Council should adjourn for a few minutes, in order that they might arrange amongst themselves as to the withdrawal of some of the nominations if they were at all numerous.

Mr. GREAVES, who said he had never before heard of such a proposition as that just made by their Chairman, and should refuse to act upon it, said it was his intention to propose a gentleman as President whom he believed to be eligible in all respects. He had been a member of the Council many years, he was one of the best and most regular attendants at its meetings, and took a great interest in every matter that was brought before the Council, not only as shown by his vote, but also by joining in the discussions and assisting the Council in arriving at clearer knowledge in every difficult matter that came before them from time to time. He spared neither time, trouble, nor expense in the performance of his duties as a member of the Council, and although he had to travel nearly 400 miles to each meeting he was scarcely ever absent. He had been President of the largest Veterinary Medical Association on two separate occasions, and had been the President of the National Veterinary Benevolent and Defence Society for twenty years. The gentleman to whom he (Mr. Greaves) alluded was Mr. Peter Taylor, of Manchester, who was deservedly respected throughout the north of England. He had been in possession of his diploma forty-two years, whilst his father and his grandfather before him were veterinary surgeons. But besides all that, he was a general practitioner from the provinces ; and although there were nearly 2,000 such in the provinces, as compared with 400 or 500 metropolitan practitioners, including professors and army veterinary surgeons, the honour of the presidentship had been conferred a number of times upon the latter, and but once in seventeen years on the former. He asked the Council to give one of the 2,000 a chance of the honour this time. He could laud the gentlemen who had occupied the chair during the last fifteen years to the very sky, but he protested against the members of the smaller body monopolising the chair another year. In conclusion, Mr. Greaves expressed the hope that the Council would confer the highest honour which was in their power to give to any member upon Mr. Taylor in as graceful manner as possible, viz., by a unanimous vote in his favour.

Mr. DRAY then proposed Dr. Fleming as President, of whom, he said, that no one knew more of the veterinary profession. It was true, he continued, that Dr. Fleming had been President three or four times, but he had performed his duties in such a way as to merit being elected once more.

Mr. WHITTLE asked to be allowed to say a word in support of Mr. Greaves's nomination. He had known Mr. Peter Taylor for more than forty years, and there was not in the north of England a single practitioner who stood higher in the profession. He thought Mr. Taylor was very deserving of the honour, and hoped the Council would elect him President by a unanimous vote.

Mr. TAYLOR asked permission to withdraw his name, feeling that he could not enter into competition with Dr. Fleming, who richly deserved the coveted honour. He (Mr. Taylor) had no ambition to sit in the chair, his mission being to do his duty in the position he then occupied.

Dr. FLEMING also wished to withdraw his name, remarking that he thought the position of President should come within the reach of all the members of the Council, and not be confined to a few. With regard to the

vote being unanimous, that ought not to be regarded as a *sine quâ non.* In fact, it was almost impossible to have a unanimous decision in such a large Council. Mr. Taylor well deserved the honour, and he (Dr. Fleming) would rather, unless they willed it otherwise, stand aside.

There being no other nominations, both Dr. Fleming and Mr. Taylor agreed not to withdraw their names, but to place themselves entirely in the hands of the Council.

A ballot was then taken, with the result that eight votes recorded in favour of Dr. Fleming, and four in favour of Mr. Taylor, Dr. Fleming thus becoming President by a majority of four votes.

The CHAIRMAN having declared Dr. Fleming duly elected President, vacated the chair, which was then occupied by

DR. GEORGE FLEMING, THE PRESIDENT,

Who, in acknowledging his election, said that in one sense he was extremely sorry at the result of the ballot, because nothing would have given him greater pleasure than to see Mr. Taylor presiding over their deliberations. He wished to heartily thank the Council, however, for placing him in the chair once more, and he could assure them that his endeavour would be to carry out his duties as well as he possibly could.

APPOINTMENT OF COMMITTEES.

The Council then proceeded to appoint Committees for the year.

Parliamentary Committee.

On the motion of Mr. J. SIMPSON, seconded by Mr. WHITTLE, the name of Mr. Dray was added to this Committee, which was reappointed; the names of the gentlemen forming it being as follows: Professors Brown, Robertson, Pritchard, Duguid, Sir F. Fitzwygram, Dr. Fleming, Messrs. Cartledge, Greaves, Harpley, H. L. Simpson, Simcocks, Barford, and Whittle.

Museum Committee.

This Committee, made up of Professors Pritchard, Axe, Duguid, Messrs. Dray, Wragg, and J. F. Simpson, was also reappointed; and on the motion of Mr. GREAVES, seconded by Mr. DRAY, and agreed to, the name of Mr. Cox was added to the list.

House and Building Committee.

Professors Pritchard, Robertson, Messrs. Greaves, Harpley, H. L. Simpson, Wragg, Whittle, Dr. Fleming, Mr. Dray, Sir F. Fitzwygram, and Mr. Barford form this Committee, and were reappointed, after it had been proposed by Mr. DRAY, seconded by Mr. WRAGG, and agreed to, that Mr. J. Simpson should have a place amongst them.

Registration Committee.

With the addition of Mr. Mulvey to the gentlemen on this Committee, which was proposed by Mr. J. SIMPSON and seconded by Mr. WHITTLE, the following were reappointed members:—Professors Pritchard, Robertson, Messrs. Cartwright, Dray, Greaves, Wragg, Whittle, Dr. Fleming, H. L. Simpson, and J. F. Simpson.

Library Committee.

No additions or alterations were made in this Committee, which was simply reappointed. Professors Axe, Robertson, and Pritchard, Dr. Fleming, and Mr. Harpley are on the Committee.

Examination Committee.

The same remark applies to this Committee. The members are Sir F. Fitzwygram, Messrs. Harpley, Woods, Wragg, Greaves, and the Principals of the different schools.

Bye-Laws Committee.

Mr. DRAY proposed that Mr. Roalfe Cox should be added to the Committee. Mr. WHITTLE seconded the motion, which was agreed to. The Committee was then re-elected. The gentlemen upon it are Sir F. Fitzwygram, Professors Pritchard, Robertson, Williams, McCall, Duguid, Walley, Dr. Fleming, and Messrs. Cartledge, Greaves, Harpley, H. L. Simpson, Wragg, Whittle, and J. F. Simpson.

Finance Committee.

Mr. Roalfe Cox was also placed upon this Committee on the motion of Mr. DRAY, seconded by Mr. WHITTLE. The existing members—Messrs. Cartwright, Dray, Greaves, Harpley, Taylor, and Wragg—were then reappointed.

Dinner Committee.

Professor Pritchard, Mr. H. L. Simpson, and Mr. Wragg were reappointed, and the name of Mr. J. Simpson was also added.

Fellowship Examination.

It was decided that this Examination should take place on June 18th.

Date of Quarterly Meeting.

Wednesday, July 7th, was fixed for the above meeting.

Mr. DRAY then proposed a vote of thanks to the President.

Mr. WHITTLE seconded the resolution, which was unanimously agreed to.

The PRESIDENT having acknowledged the compliment, the proceedings terminated.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE spring quarterly meeting was held at the Queen's Hotel, Leeds, on the 30th April, the President, Mr. Benjamin Smith, of Barnsley, in the chair. The following members were also present, viz. :—Messrs. T. Greaves, J. W. Anderton, J. S. Carter, Parlane Walker, G. Whitehead, A. W. Mason, T. E. Toop, H. Pollard, J. A. Hodgman, S. Chambers, M. Robinson, and the Hon. Sec. Mr. Exley, Leeds, was present as a visitor.

Excuses for non-attendance were received from Messrs. Dray, Danby, P. Carter, Geo. Carter, H. Cooper, Pickering, J. M. Axe, and Prof. Williams.

The minutes of the previous meeting were read and passed.

The PRESIDENT proposed, and Mr. CARTER seconded, the election of Mr. Martin Robinson, Barnsley. Carried.

The question of this Society supporting the movement for establishing a new veterinary periodical was discussed, and Messrs. Carter, Greaves, and the Secretary expressed their opinion against the movement.

Ultimately, Mr. GREAVES moved "That the Yorkshire Society do not participate in the scheme." Mr. MASON seconded, and the resolution was carried almost unanimously.

Mr. PARLANE WALKER exhibited and explained the action and uses of his improved parturition instrument, including an improved safety-hook, forceps, knife, and crutch.

Mr. GREAVES proposed, and the PRESIDENT seconded, a vote of thanks to Mr. Walker for his ingenuity, zeal, and patience, as shown in the construction of these useful instruments. Carried unanimously.

These instruments consist of forceps, long double-jointed hook, small jointed hook, crutch, and embryotomy-knife and skinner combined. The forceps are very light, strong, and flexible; the joint is a most simple and ingenious contrivance—being a double-sliding eccentric joint, the more it is pulled the firmer the jaws of the forceps grasp. These forceps are attached to a long jointed handle by a small steel pin, which retains the power of twisting the instrument to the right or left if necessary. They can be introduced with greatest ease and safety; should the animal become suddenly restive, they can be withdrawn or allowed to remain in the passage with impunity; they can be held and supported by the external hand while the operating hand is exploring for the best part on which to fix them. The long double-jointed hook is slung to the hand by a small strap; the jointed handle used for the forceps is also applicable for this hook and the crutch; they can be attached to it with a small pin; the flexibility of the long handle can be prevented while using it for a crutch, by inserting a small pin into the joint.

The small pointed hook, which he calls his "safety hook," is also slung to the exploring hand by the rope in common to this hook; it is five inches long, and is so constructed as to give great twisting and lifting power. The safety of it lies in the peculiar shape of the hook, and in its being jointed at the neck, should the hook suddenly lose its hold; and is so arranged as to close with the least possible pressure, thus preventing any injury that otherwise might arise.

His embryotomy-knife and skinner combined is a most ingenious invention, and can be introduced with the greatest ease and safety, and is slung to the hand, thus giving the exploring hand freedom and time to determine where to operate; by grasping the handle, and pressing with the thumb, the blade opens; as soon as the pressure is removed the blade recedes, through the action of a double spring; then the front or shield part of the instrument can be used as a skinner instead of the fingers.

This complete set of instruments weighs only four pounds, and the case is fourteen inches long. These instruments are patented, and in the meantime can be supplied by the inventor, in order that he may see them turned out in perfect working order.

Mr. GREAVES introduced the subject of "Sanitary Stable Management," dividing his paper into ventilation and drainage of stables, the diet of horses, and the different substances used for bedding in stables—the essayist's opinions being almost an epitome of those expressed by Professor Pritchard in an essay read by that gentleman a short time ago.

Mr. P. WALKER said that he had studied the principles of ventilation and the laws of the diffusion of gas very minutely, and he had arrived at the conclusion that it was impossible to ventilate a stable by admitting the cold air from the floor; the cold air should run through a punctured shaft in the ceiling, whilst the vitiated air passed up a heated passage in the centre of the stable. He was of opinion that all drainage traps should be outside the stables.

Mr. TOOP was of opinion the cold air should be admitted per the roof or ceiling, and generally advocated Mr. Walker's views.

Mr. CARTER described the mode of ventilation adopted in the Great Northern Railway stables in Bradford, which, he thought, was very efficacious.

The PRESIDENT thought that thorough drainage was the great desideratum in stable management.

Mr. MASON and the SECRETARY continued the discussion; and Mr. GREAVES having replied, the PRESIDENT proposed, and Mr. CARTER seconded, a vote of thanks to Mr. Greaves for his kindness in introducing a subject for discussion. Carried unanimously.

Mr. PARLANE WALKER volunteered to read a paper at the July meeting on "Ventilation, and the Diffusion of Gases."

SOUTHERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

(*Continued from page* 455, *vol. xxii.*)

Etiology.—Having thus briefly directed attention to the nature and general characters of these forms of disturbed nutrition in bone which appear amongst some of the animals which come under our notice, I would now, in an equally brief manner, place before you some conditions and influences in association with which these changes seem more particularly liable to be met with. Whether these are the only or the true inducing factors in their production, further observation may determine. The statement of these will, at least, afford an indication which, if followed up, may exhibit to us the lines and the direction along which these influences will be found to travel.

Amongst sheep both the manifestation of paraplegia in lambs and bone fragility and softening in older sheep—which may fairly, I believe, be looked upon as forms of Rickets—are rarely encountered save as enzoötic affections. The countries and localities where these are common, however much they may be separated geographically, will, upon examination, be found to possess a certain similarity of geological features. In South Africa, America, and Great Britain—those districts where these disturbances of bone nutrition are known—the soil is generally spoken of as being "thin." In our island it is chiefly what is known as "light" or "moory," containing much vegetable matter resting on moorland, gravel, or sand. This soil, so long as it remains in its natural condition, may be regarded as a fairly healthy sheep-walk; when broken up by the plough, and particularly when receiving a dressing of caustic lime, it is at once converted into a condition the opposite of healthy. Immediately on being thus treated, the chief diseases which make their appearance amongst sheep confined to these soils are varied exhibitions of disturbed bone nutrition. There seems little doubt that the existence of these diseases depends upon dietetic influences primarily arising from the condition of the soil, which influences animal nutrition through determining the character of plant-life developing there. Although we may not be able to state exactly what elements are wanting, or what are redundant, we are yet pretty certain that particular soils, when treated in a certain manner, will give rise to this affection in lambs the offspring of ewes which have been fed during gestation on the produce of these lands, and also in young sheep when similarly treated.

It is not absolutely necessary that either ewes or sheep be located on these lands to ensure the appearing of the disease in the animals subjected to such management. The same results will follow, whether located on these particular lands or not, provided they are supplied with food grown there.

To secure a development of this disease in the chief districts of our island where it is known to exhibit itself, all that is needful is to bring these light soils under tillage and apply to them a dressing of caustic lime. Either of these modes of treatment may incite conditions favourable to the appearance of this disturbed nutrition in bones, but it is most certain to succeed when these are carried out together. It seems to matter little whether—when broken by the plough—these soils are at once laid down in grass or used at first for root-growing. In either form the food grown upon them may not be used with impunity for breeding-ewes or for feeding young sheep. The most disastrous results are attendant on placing pregnant ewes upon turnips grown on such soils during the middle and late periods of gestation.

That the lime which has been applied when the pastures were broken up is a chief factor in developing the malnutrition, is so far proved by the fact that the virulence of the disturbance is in direct proportion to the quantity employed and the proximity to the period of its application. That it is not in itself hurtful, but rather by virtue of its action upon the particular soil,

seems probable, when we consider the impunity, or rather benefit, with which it may be applied to soils of a different character. It would appear rather that the lime, entering into combination with certain materials, vegetable or mineral, tends to produce or liberate agents which, being taken up by the plants growing there, operate prejudicially on particular organs or tissues of the sheep.

Any chemical analysis which I have had undertaken of roots or soil where these affections have prevailed has failed to account in a satisfactory manner for the existence of the disease. Experiments which have been carried out upon sheep themselves prove that both paralysis and bone fragility may be produced by placing the animals under the influences of food and location which we have indicated. If any difference exists in the severity of the seizures, it seems to be in the case of animals brought from other situations and lands where the affection is unknown. I do not by this mean to indicate that anything approaching to acclimatisation exists, only that animals hitherto exempt from the pernicious influences of such soils suffer more severely than others previously exposed to them.

Amongst horses, and other animals besides sheep, the operation of unfavourable indwelling and surrounding influences in determining the appearance of disturbed bone nutrition are frequently seen. Badly-nourished foals —the produce of weak and effete parents, unnaturally treated by confinement in cities and towns, in close, badly-lighted, imperfectly-drained, and foully-kept stables—are highly-susceptible subjects. In these we may early observe the bending of the long bones, the unthrifty condition of the skin and coat, the pendulous abdomen, with absence of flesh on the ribs, the irritable and disordered state of the bowels and digestive system generally, with want of life, juvenile vigour, and vivacity. Even in rural districts the same or nearly similar conditions, probably not so well marked, are observed in foals where, through the exercise of a mistaken economy, the breeding-mare is, first, a worn-out animal, badly fed and ill-cared for; and, second, when the foal is born—probably a weakly creature—the dam is not permitted to remain with it all day, nor is she otherwise treated so as to furnish supplies for the increased demands upon her system, while the weakly little animal is confined in some dark, out-of-the-way corner of the homestead, only having the company of its over-taxed mother at stated periods upon which to make attempts to satisfy its hunger.

There is no more mistaken policy than for the breeders of animals to expect a healthy, well-nourished progeny from parents one or both of which are so often set aside for breeding purposes because thought fit for nothing else, or from any animals naturally healthy and well-formed, or the opposite, when ill-treated and imperfectly nourished; while many also lose irreparably, even when they have got a good foal, by grudgingly withholding liberal dietary and the enjoyment of good sanitary conditions.

In the instances of bone-softening and fragility in adult horses the greater number of cases which have come under my notice have been in pregnant mares, as already stated. The alterations which are observed in bone tissue undergoing this change are those of active decalcification, with degeneration of the softer organic material. The causes of such change are unknown, but they appear to possess a close, although ill-defined, connection with the condition of pregnancy. That these may depend upon certain changes occurring during this condition in the blood seems probable—changes which render it less capable of maintaining the normal nutrition of bone; but whether these are excess of lactic acid, or an imperfect elaboration of the more directly nutrient portions of the fluid, has not yet been determined. A somewhat similar condition of change of bone tissue I have noticed in both horses and cattle where the animals were deprived of open-air exercise, but

receiving full supplies of nutritious food, and where they might be considered plethoric.

With our smaller animals—sheep in particular—the causes are essentially of a dietetic nature, and in general may be regarded as closely allied, if not identical, with what are in the same animals, at a different age, found operating in the production of Rickets. Bone tissue may have been developed in a fairly normal condition, but, from an inadequate supply of proper nutriment or mal-assimilation, the natural waste is not provided for, and degenerative changes in the tissues are favoured. With these it would appear that the true causes lie outside the animals, since we know that, by appropriate alimentation, whereby certain materials are supplied for assimilation, fatal results may be largely curtailed.

The CHAIRMAN then invited discussion on Professor Robertson's paper, which he described as highly interesting, scientific and elaborate, and of great importance, because a great deal of the prosperity of farmers depended on the health of their stock, especially sheep. The attention of veterinary surgeons was, however, very rarely called to Rickets in a flock. Rickety lambs lay about and died, and the veterinary surgeon was not often called in to them; but it was very necessary that veterinary surgeons should be well up in the disease of sheep, so as to be able to discuss them with farmers. The other night he (the President) was at a meeting where a farmer read a paper on the diseases of sheep, and Professor Robertson was very largely quoted on that occasion. There were no diseases of more importance than those affecting the food of the people, and therefore he hoped there would be a good discussion on the paper. Professor Robertson had said that certain lands were productive of Rickets. In his (the President's) neighbourhood the soil was chalk, and there the disease was not so much experienced as in other parts. The question was, whether the supply of albuminoid compounds was a remedy for the disease, and what was a preventive. He supposed pea or bean meal, and so on, would be food rich in albuminoid compounds.

Mr. EDGAR, after thanking Professor Robertson for his paper, said it must be admitted that the diseases of sheep had been greatly neglected by veterinary surgeons, for the reason, not that they did not take an interest in them, but that they were not often called in to deal with these maladies. Unless there was disease on a large scale, it was left to the shepherd to deal with. He thought Professor Robertson had proved almost to demonstration that the malady of Rickets was a dietetic one, but, with all respect, he differed a little with regard to the intimate cause of the malady. He could not agree with the Professor that there was a direct analogy between Rickets in lambs and other animals and *Osteo-porosis* and *fragilitis*, because he thought the one to be a disease of construction and the other to be a disease of destruction. This congenital disease pointed altogether to the fact that the ewes and the young lambs were not supplied with the food necessary to build up healthy bone. He did not agree that Rickets was caused by something in the turnips or grass that the animals ate, but he said the cause was that a certain something was not in the food—that it was an absence of necessary constituents in the turnips or the grass. Professor Robertson admitted that the disease appeared after land was broken up and fresh soil stirred up from the bottom. What was the object of stirring up the land? It was to get an increased growth of crops. The farmer put on a dressing of lime to increase the fertilising power, and the turnips and grass then grew so luxuriantly and rapidly that they did not have time to take sufficient material from the soil to produce bone material. The anatomical conditions pointed out clearly showed, he thought, that the disease was Rickets pure and simple. What would strengthen Professor Robertson's case would be chemical analyses of the vertebræ of an affected lamb and of the vertebræ of a lamb reared under

altogether different circumstances and with a healthy spine, to show whether there was a due proportion of phosphorus. It seemed to him that the whole thing pointed to an absence of phosphate of lime in the material grown in the soil. It was due to some deficiency in the vegetable material itself. If a chemical analysis showed a deficiency of phosphate of lime in the affected animal, and not a deficiency of any other chemical compound, that would go largely to prove that the disease was due to an absence of phosphate of lime. But he did not quite see that the absence of albuminoid material explained the disease wholly, because if the remedy applied was beans, or pease, or pulse, they contained a large quantity of phosphates, which were necessary in order that true bone might be developed. He was glad that Professor Robertson had come to the conclusion that Rickets was a bone disease, and not a disease of the spinal cord, as Professor Williamson and other Scotchmen held. Why he did not think there was quite a comparison between Rickets in the young lamb and *Osteo-porosis* was that he believed there was no evidence to show that a large quantity of phosphates or carbonates were thrown off in the former case, while in the latter case they had it decalcified, absorbed, and cast out of the system in urine. Neither did the subsequent treatment of the cases show a comparison. They were told that Rickets might be prevented by the proper dieting of lambs and ewes, but this was not the case in *Osteo-porosis*. The latter disease could not be arrested, in spite of anything that might be done.

The PRESIDENT said there was a disease to be met with among sheep which he believed was the result of high farming and high feeding. He noticed that where a man farmed high, and fed his sheep high, the sheep were predisposed to inflammatory affections, and there was generally softening of the liver also. He should like to have Professor Robertson's opinion as to whether this was due to an imperfect appropriation of the constituents of the soil. Inflammation of the womb was common under such circumstances as he referred to, and in one case a farmer lost a great many ewes when lambing. He (the President) took one affected animal home, and its fat was sold for 9s. He advised the farmer to take his flock off corn and put them on a hillside, where they had to work for their living, and when this was done the mortality ceased. He noticed that where there had been a luxuriant and rank growth of Swede turnips, and sheep were put on them to feed, inflammation of the bowels was set up through irritation from the turnip-tops, and the sheep soon died.

Mr. BARFORD, after expressing his desire that Professor Robertson's valuable paper might be published *in extenso*, said that in his younger days he had a great deal to do with sheep, and he had always been under the impression—which had been somewhat corroborated that day—that the main feature of the disease of Rickets in young lambs was the absence, more or less entire, of the phosphates that went to the formation of healthy bone. There was no doubt that, in a very large proportion of cases, it was due to malnutrition of the ewe or of the mare, for he had seen the disease very marked in foals. He was particularly interested to hear that it had been demonstrated, by *post-mortem* examinations and other tests, that the disease existed to a very large extent in the vertebræ, and that it could not be coupled or attached to any disease of the spinal cord itself.

Mr. WRAGG said very few sheep came under his notice, but he would like to make a remark about diseased bone in a horse. At a knacker's yard one day he was shown the bones of what he was told was a three-year old cart filly. The animal had evidently suffered severely from Laminitis, for the hoof had grown long and the soles were very much dropped, and absorption had taken place at the toe of the pedal bone. But the peculiarity of the bones was that they were so very light and so very white. The pastern bones weighed a

third less than healthy pastern bones. He came to the conclusion that it was due to deficiency of phosphates, and he supposed it had some reference to the disease they had heard described to them that day.

Mr. HOLLINGHAM, in the course of his country practice, had come to the conclusion that a work on the dietetic diseases of the sheep would embrace nearly every malady from which that animal suffered, or the most fatal ones at any rate. The affection Mr. Martin spoke of was not at all uncommon, and he (Mr. Hollingham) always found in such cases that the animals had been doing too well, because when, instead of folding them on a fresh piece of ground every day, they were given a fresh piece once in two days only, and their cake was taken off, they improved directly. If those that died were opened, the fat was found as stated by Mr. Martin. About two years ago the sheep in a large flock at Walton-on-the-Hill died off rapidly, with every external appearance of the Rot, but there were no flukes in the liver, and the conclusion he (Mr. Hollingham) came to was that the mortality was caused by over-feeding and unsanitary conditions. With regard to Rickets being a disease affecting the spinal column, and not the extremities, malnutrition, he imagined, would involve one bone as well as another.

Mr. HOGBEN had noticed that the disease was influenced more by season than by geographical situation. It was very much more prevalent some years than in others.

Professor ROBERTSON, replying on the discussion, said the identity of Rickets with other diseases of bone tissue was a very vexed question. He (Professor Robertson) was not sure they were identical. Younger pathologists were inclined to treat them as Rickets of infancy, Rickets of puberty, and Rickets of maturity. Mr. Bland-Sutton denied the identity, and brought forward the same objection as Mr. Edgar. But there was a wonderful relation established between Bone-softening and Rickets; they occurred under exactly the same conditions of diet and location, and they seemed to be propagated or checked by the same agencies. Having turned his attention to it, he was inclined, at the present moment, to regard Rickets as essentially a bone disease, as exactly the counterpart of that Sutton referred to as a diseased condition of the bone textures forming the spinal canal. With respect to chemical analyses, he had been misled once or twice by them so gravely that he had lost faith in them a great deal. He agreed with Mr. Edgar that the disease was attributable to the want of something in the soil. In fact, it was altogether a dietetic question, and had nothing to do with climatic influences. Some said it depended upon breeds, but he did not think that was substantiated. Why there should be more disease in certain years than in others, he could not explain. With respect to the President's question, there were a very great number of diseases which affected sheep, such as Plethora and Cerebral Congestion, and in many cases of pure Ænemia they had animals die very fat. He had seen an animal the leg of which weighed 40 lbs. He did not think Mr. Hollingham was very far wrong when he said the bulk of the diseases of sheep, apart from Anthrax, were of dietetic origin. Rickets had been looked upon as a pure disease of the spinal cord, but he was quite sure that was wrong. The supposed Parturient Fever that breeding ewes had was more frequently true Septic Fever. The food he would give to breeding ewes would be such as would keep them in good condition, and likely to produce healthy lambs, without being excessive or inducive of Plethora or Cerebral Congestion. He was certain that root food was not likely to be used so much in the future as in the past. Roots were only to be looked upon as supplementary agents, both in feeding and in stock. He knew of no worse diet for breeding ewes than Swede turnips. It was desirable that a great deal more attention should be paid to the diseases of sheep, and he believed it would be given if farmers would pay for it. There seemed

to be some waking-up in the matter, and he had that day received an application to send a man to the Falkland Isles to treat sheep, but, as a rule, it was only in large sheep districts the veterinary surgeon was called in about the flocks.

Mr. BARFORD observed that, as a rule, agriculturists gave far too liberally of roots through the winter to breeding ewes; and when they remembered that these roots contained ninety per cent. of water, they could easily perceive what an evil their injudicious use might be. It was notorious that this was the shortest root crop ever known, but the farmers of his district all told him they had done far better with their sheep than they could have reasonably expected.

Mr. EDGAR: There is a greater average of twin lambs this year than ever before in England, taking the breeding districts from which returns have as yet come in.

Professor ROBERTSON: I think the fact has been well recognised by those who know most about sheep, that the largest proportion of healthy lambs was when the root crop was scarce, and artificial foods had to be resorted to. I have often told my farming friends, "You will have a great death-rate, because you have a good root season."

Mr. SIMPSON (Maidenhead) proposed a vote of thanks to Professor Robertson for his paper.

Mr. BARFORD seconded. Carried.

Mr. SIMPSON (Windsor) proposed a vote of thanks to the retiring President, who took the greatest possible interest in the work of the society, and had done it a great deal of good. Mr. Martin said what he thought, and did not mince matters, and perhaps it would be a good thing if there were more like him.

Mr. WRAGG, who seconded, said he believed Mr. Martin was the father of the society, and had never missed one of its meetings.

The resolution being carried,

The PRESIDENT said he had been as energetic as most of the members in promoting the prosperity of the society, and he thought the advancement of the society depended a good deal upon individual efforts, as well as upon collective action. He noticed, the other day, that Dr. Fleming, who had done so much to advance the social and professional position of veterinary surgeons, presented their friend Mr. Walters at Court. That was a step in the right direction, and if every one took as much interest as Professor Robertson and Dr. Fleming in raising the social status of the profession, and if all its members contributed as much as they could individually to that end, there would soon be a great improvement. Unfortunately, all the members did not support the society so well as could be wished. For his own part, he had never missed one meeting, and had done all he could that they should have successful meetings and valuable discussions.

The members afterwards dined together at the hotel.

THE LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE eighty-seventh quarterly meeting of the above Association was held in the Medical Institute, Liverpool, on the 14th May, 1886. The President, Edwin Faulkner, Esq., M.R.C.V.S., occupied the chair.

Present: Messrs. Greaves, Storrar, Whittle, Woods, W. A. Taylor, Briggs, Hopkin, A. V. Field, and J. S. Hurndall.

On the proposition of the SECRETARY, seconded by Mr. STORRAR, Messrs. Arthur Leather, A. V. Field, A. W. Middlehurst, — Dobie, jun., and Stafford Jackson were elected members of the Association.

The SECRETARY then read the report of the Committee formed to promote

the election of Mr. Storrar for a seat in the Council, and after a correction had been made, to meet the requirements of Mr. W. A. Taylor, the report was approved and adopted.

Mr. W. A. TAYLOR then called in question the action of the Secretary with respect to the steps he had taken in conjunction with the secretaries of the Lancashire, Yorkshire, and Midlands Associations, in issuing two election circulars, in which that gentlemen was supported by Messrs. Greaves and Briggs ; whereupon

The PRESIDENT stated that he did not consider the Secretary had gone beyond his instructions from the Society and Election Committee, and under the specially difficult circumstances which had arisen he was quite satisfied with what had been done by the Secretary.

The PRESIDENT intimated that the Treasurer took exception to a minute passed at a previous meeting.

After a lengthy discussion Mr. GREAVES proposed, Mr. WHITTLE seconded, and Mr. WOODS supported, that the said minute be expunged, which was accordingly done.

Mr. Bell's resignation of membership was accepted with much regret and sincere expressions of sympathy.

The SECRETARY asked permission to make a personal explanation respecting a misunderstanding that had arisen between himself and the Treasurer concerning the payment of the accounts of the Association ; and in consequence of this, together with the remarks made by Messrs. W. A. Taylor and Greaves, which he considered involved a censure, intimated that he should resign his official position.

Messrs. GREAVES, WHITTLE, WOODS, and the PRESIDENT urged Mr. Hurndall at least to allow his resignation to stand in abeyance till the next meeting, which he consented to do for that time.

The evening had so far advanced that Mr. Greaves considerately allowed the reading of his paper, on the further discussion of Professor Walley's essay, to be deferred till the meeting in August next.

Mr. W. A. TAYLOR intimated that in consequence of the action of the Executive of this Association in the late election of members of Council, he could not longer remain a member, and at once resigned.

After various unavailing attempts had been made to induce this gentleman to reconsider his determination, the PRESIDENT explained that such a course on the part of Mr. Taylor was a direct censure, and that he could not, under such circumstances, retain his official position, and thereupon resigned both that and his membership, and the meeting came to a conclusion.

J. SUTCLIFFE HURNDALL, *Hon. Sec.*

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE fifty-eighth meeting of this Association was held on Friday, May 28th, at the Bell Hotel, Leicester. Mr. A. Over, president, occupied the chair, and there were present : Messrs. W. H. Blunt, Lutterworth ; R. R. Cole, Hinckley ; R. H. Merrick, Northampton ; T. Greaves, Manchester ; H. R. Perrins, Worcester ; H. Olver, Tamworth ; F. C. Golden, Rugeley ; D. Aitken, Loughborough ; J. J. Burchnall, Stamford ; J. G. Parr, Leicester ; E. Meek, Walsall ; Captain B. Russell, Grantham ; J. S. Barter, Rugby ; R. Simpson, visitor ; W. Carless, Stafford ; H. Goodall, Melton Mowbray ; J. Wiggins, Market Harboro' ; B. Freer, Uppingham ; Fraser, Leicester ; Bailey, Leicester ; and T. Chambers, Dudley, *Hon. Sec.*

The minutes of the last meeting were read and confirmed.

Letters of apology were received from Messrs. Blakeway, Stourbridge ; Trigger, Newcastle ; Tipper, Birmingham ; Verney, Stratford-on-Avon ;

Professor Walley, Edinburgh; Gamgee, Birmingham; Moir, Cardiff; Beddard, Wolverhampton; A. Green, Dudley; H. Collett, West Bromwich; and H. J. Cartwright, Wolverhampton.

The following gentlemen were elected members of the Association:—

Mr. Fraser, Leicester, proposed by Mr. J. G. Parr and seconded by Mr. Wiggins; Mr. A. Spruce, Kingswinford, proposed by Mr. T. Chambers and seconded by Mr. F. C. Golden; Mr. E. Bailey, Leicester, proposed by the President and seconded by Captain Russell.

Captain RUSSELL said he wished to make a few remarks with reference to the fees that were allowed to veterinary surgeons at a county court. He understood that a list had been drawn up and revised, by which the fees of different individuals were determined who appeared as witnesses either for the plaintiff or the defendant, and according to that list "gentlemen, merchants, bankers, and professional men were allowed fifteen shillings; but accountants, tradesmen, auctioneers, veterinary surgeons, clerks, yeomen, etc., from seven to fifteen shillings." He considered it to be a great honour to be a member of the veterinary profession, but if he was to be ranked in the same category as clerks and auctioneers, the sooner he was out of it the better. He begged to suggest that Mr. Perrins should put the matter before the Council with the view that some arrangement might be made so that members of that profession should be placed in a better position on the list. He thought the gentlemen who drew up the list were under the impression that veterinary surgeons were promoted farriers. (Laughter.)

Mr. PERRINS said it was a most important matter, and he should have great pleasure in mentioning it at the next Council meeting. It was necessary we should do something, but the question was, Was it too late? If the rules were made and framed, what were they to do? they could not insist upon the county court pleasing them as a body.

Captain RUSSELL: How often do they make rules?

Mr. PERRINS: I am ignorant about that, but I agree with you that it is a most important thing, and I will certainly mention it at the next Council meeting.

Mr. T. CHAMBERS did not think it was too late. When the new Bankruptcy Act came into force, the shorthand writers' fees were reduced, but they as a body sent a petition to the Lord Chancellor, and they got their old fee back.

Mr. PERRINS: Unfortunately we do not get a Council meeting until July.

Mr. WIGGINS: Why should we not combine and get the veterinary profession throughout the land to unite in signing a petition against such an infamous thing?

Mr. OLVER suggested that veterinary surgeons should not give their evidence until they got their fee. He said the county court judge, or whoever else was trying the case, could only make them state what was a matter of fact, and could not oblige them to give an opinion, and it was nearly always an opinion that was wanted.

Captain RUSSELL proposed: "That the members of this the Midland Counties Veterinary Medical Association have heard with much surprise that veterinary surgeons, who are recognised professional men, have been placed on the second list with auctioneers, clerks, etc., by county court judges, who have recently determined the fees of witnesses, and that steps be taken to rectify this error."

Mr. CARLESS seconded the resolution, and it was carried.

Captain RUSSELL contended they were perfectly justified in their line of conduct, and proposed that the matter be left in the hands of Mr. Perrins, member of Council for the Midland Counties.

Mr. GOODALL seconded the resolution, and it was carried.

The CHAIRMAN pointed out that it would be wise if a number of instruments were purchased for the use of members of the society. The suggestion was supported by Mr. OLVER, Mr. PERRINS, Captain RUSSELL, and Mr. MEEK, and it was arranged that the matter should be considered at the next meeting of the association.

The CHAIRMAN said that the next business before the meeting was to discuss the advisability of having a journal for publishing the reports of veterinary medical meetings.

The subject was introduced by Mr. OLVER, who said that while he was of opinion that they were not fairly well reported, yet he could scarcely see the way of giving the funds of a society like their own towards another journal. He thought it would be over-stepping the mark. Perhaps it would answer the purpose sufficiently that some sort of agitation had been brought on, which would show their journals that they were not giving every satisfaction, and the result might be that they would be better reported.

Mr. GREAVES said he was entirely of the opinion that Mr. Olver had expressed—they were not in a position to countenance that movement ; and he thought it would be unfair to the other journals who had had to fight the battle from the beginning without any assistance whatever. The editors of the journals would tell them that they reported everything that was sent to them. And what more could be expected? He thought they had an abundance of reading in the two existing journals month by month.

Captain RUSSELL said he agreed with the two previous speakers, that that association should certainly not take to itself the duty of a publishing office, at the same time he thought it would be a great advantage to the profession if they could obtain *verbatim* reports of the different discussions that took place on papers, as also copies of the different papers read before all the societies in the United Kingdom. No doubt the VETERINARY JOURNAL and the *Veterinarian* did the best they could ; but if they could have a veterinary medical association report, and every society pledged itself once a year to supply a committee formed by the profession with records of their year's work, a copy of the papers read, and the discussion which ensued, to be published in the form of a pamphlet, he thought it would prove very useful among members of the profession. The only way they could do that was to apply to the different associations : get a certain number of the members of the profession to register their names as annual subscribers, and then leave the matter in the hands of a committee to do the publishing. They could not utilise the funds of any particular society, and if better reports and more interesting literature were to be obtained, it could only be by the way he suggested.

Mr. PERRINS said he mentioned the subject at the last Council meeting, and he learned that Professor Axe was willing to conduct a new journal if the different associations thought it worth while to assist him pecuniarily, which would be a very great improvement on the old ones, according to the Professor's intentions ; but one of the old ones would have to go to the wall, and the question was whether they would benefit by the new one? and whether they would get fuller reports?

The Professor proposes that the new publication should be issued every three months, and contain full information of the doings of all the associations.

Mr. GREAVES said each association should subscribe ten guineas ; there is ten of them, which would be £105, and that would be a very nice sum to any one to commence a new business (a laugh). If our meetings are published once a month it is old news, and the same remark applies, but with more force, if it comes out once in three months—or in twelve months. If there is any improvement to be made in our publications, I say it should be a shorter

time—once a fortnight. I think we cannot do much better than be as we are; start another would be unfair to our present journals.

Mr. MEEK said if Dr. Fleming would give them more English and less Indian news it would be more conducive to their benefit, and enhance the value of his journal. They did not want to know so much about the diseases in India; but to know more about the diseases which occurred in England; they also wanted less Army news, and more general veterinary literature. He would like that opinion expressed to Dr. Fleming; it might be useful to him, and if he would act on it he was sure the VETERINARY JOURNAL would sell much better.

Mr. GREAVES said that Dr. Fleming told him that he prints everything sent to him by the Veterinary Medical Associations; and he moved that the Midland Counties Association do not at present see their way in assisting in the new journal.

Mr. MEEK seconded, and it was carried.

The CHAIRMAN said, having at Worcester been elected as President for the ensuing year, he thanked them most sincerely for the honour conferred on him; but he felt that he had neither in the past merited the confidence they had thus placed in him, or that he should be able to do justice to the important post during his term of office; but having been elected he accepted the position as a duty devolving on one who had been in the Association for many years. He was sorry he had done but little, but he would endeavour to amend his services to the cause, which was a good one. He knew he had many shortcomings, and he, therefore, had the more need of sympathy and help, both of which he should, with confidence of success, ask from one and all of them. He would first of all ask them to attend all meetings, and previous to the meeting to give special thought to whatever paper was to be read, so that they might be prepared to take part in the discussions. In conclusion he said he hoped he would give offence to no members by asking that all debate should be conducted in that gentlemanly manner that had hitherto characterised that Association.

Mr. H. W. BLUNT read a very interesting paper on Diarrhœa in cattle.

The discussion was carried on by Messrs. W. Carless, Chambers, Olver, Perrins, Merrick, Goodall, Aitken, Captain Russell, Messrs. Meek, Burchnall, Wiggins, and Barter.

Mr. BLUNT briefly replied upon the discussion.

It was arranged that the next meeting of the Association be held at *Wolverhampton.*

Mr. CHAMBERS proposed a vote of thanks to Mr. Blunt for his able paper.

The CHAIRMAN seconded it, and it was carried.

Mr. GREAVES proposed that the best thanks of the meeting be given to the Chairman for presiding.

The CHAIRMAN acknowledged the compliment, and thanked them for attending the meeting.

Mr. PERRINS having thanked all who voted for him on the Council, the meeting broke up, and the members afterwards dined together.

THOMAS CHAMBERS, *Hon. Sec.*

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

QUARTERLY MEETING.

THE usual quarterly meeting of the North of England Veterinary Medical Association was held on Friday, 28th May, in the County Hotel, Newcastle; the President, Mr. J. B. Nesbit, Fence Houses, in the chair.

Present: Messrs. Dudgeon, Sunderland; Gofton, North Shields; Nesbit,

Fence Houses; McGregor, Bedlington; Elphick, Handcock, Moore, Borthwick, and the Secretary, Newcastle-on-Tyne.

The minutes of the previous meeting were taken as read.

The TREASURER presented the annual report. He said that, although the accounts were read at the previous meeting, they had not then been audited. Since then they had been audited by Messrs. Stephenson and Hunter. The balance was £13 17s. 0½d.

The SECRETARY (Mr. Colin Gresty) nominated Mr. F. Brown for election at next meeting.

The SECRETARY then said: Just before the last annual meeting I had a letter from Mr. Greaves, of Manchester, in which that gentleman wished me to bring forward the statement that the societies in the South have their meetings advertised a month beforehand in the journals, and I think it would be advisable if the North of England Society were to do the same.

It was agreed that the meetings should be advertised, as suggested.

The SECRETARY next said: It was proposed at last meeting by Mr. Elphick, and seconded, I believe, by Mr. Awde, that the Secretary should look about and see if he could find a reporter to take notes of the proceedings of the Association, and also to try and find out the cost. The gentleman who took the report of the annual meeting could not spare the time, but he has introduced me to another gentleman, who is now taking notes. He could not say at first what the cost of reporting the proceedings would be, but he is taking this meeting as a sort of test for two guineas, and will afterwards give an estimate of what he will report the proceedings for regularly.

The matter of permanently engaging a shorthand writer was left over until next quarterly meeting, by which time they will have an estimate of the cost before them.

The CHAIRMAN said: The next part of the business is the adjourned discussion on the President's inaugural address.

Mr. MULVEY said: I must first of all express my very great satisfaction at seeing Mr. Nesbit occupying the position he does, and at the very able address that he gave us. He laid great stress in particular upon individual effort on the part of the members of the profession to raise the profession to which they belonged both socially and professionally, and said that individual effort was certainly more likely to raise us in the estimation of the public, and the professional public in particular, than Acts of Parliament. With that I am very sure you, like myself, will very cordially agree. He then touched upon Professor Brown's pamphlet. I think that Professor Brown's pamphlet has been answered by the profession at the late election. He was a Member of the Council, and had been for some years, and at the last election he was thrown out, and only received a very limited number of votes; so that I think the profession have, at all events, expressed their disapproval of the pamphlet he issued—not only the pamphlet, but his action in allowing the registered practitioners to be placed on the same footing as members of the profession, under the Contagious Diseases (Animals) Act. One other subject I would like just to touch upon—the Fellowship degree. This society has taken a very active part in opposition to the Ninth Clause, and I have endeavoured in my place in the Council to carry out the ideas of this Association and of those who think with me. Up to the present time we stand in the position that there is now a motion, which will come before the Council in July, to the effect that the disputed portion of the Ninth Clause of the Supplementary Charter be rescinded. I am very doubtful whether that will be carried; in fact, I think there is very little chance for it now. At one time I had good hopes that it would be carried, but lately the opinions seemed to have turned the other way. I was very much surprised at the annual meeting, which was a public one, of the profession, that only seventeen men held up their hands

in favour of it being rescinded; all the others were opposed to it. I thought that was such a strong expression of opinion that I did not know where to look or what to think of it. The question was allowed to be put, that the disputed portion should be rescinded; that could only be as a recommendation to the Council, and there were only seventeen who wanted this rescinded at a public meeting of the profession. After such an expression of opinion——

Mr. ELPHICK: Would that be a fair representation of the profession at large?

Mr. MULVEY: No; but it was an annual meeting and a public one, and thirty-seven hands were held up against it.

Mr. ELPHICK: We know perfectly well that, as far as the profession has been canvassed, there is a large majority in favour of having it rescinded.

Mr. MULVEY: Just excuse me, I will be done in a moment. This happened, and I feel very sorry about it. I must tell you that the motion put to the meeting was, "That all members who obtained the diploma of the R.C.V.S. up to 1886 (not 1876, when the Charter was obtained)," etc. Professor Walley and others were there, and could not conscientiously support it. They said that if the proposer would put in 1876 instead of 1886, they would vote for it. I was in the same position myself. I would have voted for it if it was made 1876, but I could not see my way clear that it should apply to all who had obtained diplomas after that time. Our President next referred to the Contagious Diseases (Animals) Act, and stated the immense amount of good it had been to the public generally. I think it should go forth from a society of this kind, the advisability of making that Act a compulsory one, and not permissive. We feel this, particularly in the county of Durham, where the authorities, in fact, never put it into operation unless they are obliged to; until the Privy Council make it compulsory, they let thingsalone to take their chance. Another subject was the advisability of veterinary surgeons being appointed inspectors of meat and dairies, and I believe he made some suggestion that some representation should be made to the Privy Council Office, asking that they might be placed on that footing. Of course we all know and believe that veterinary surgeons are the proper men for that sort of work. It is their work. They understand all the particulars of the sanitary arrangements of byres, and the best methods of keeping cows in health, in order that their produce, the milk, should be in a fit state for the use of mankind.

Mr. ELPHICK said: I have very little to say upon our worthy President's address, but, if I am not out of order, I think this Association will expect some sort of apology or explanation from me with reference to the last election of Members of the Council. I have no doubt many of you have seen Professor Williams' letter of apology in the *Veterinarian* and the VETERINARY JOURNAL in regard to my nomination. I had great hopes of success when Professor Williams expressed his desire to nominate me, as it would be the means of getting a great number of more votes than otherwise. Unfortunately, through illness, Professor Williams neglected, in some way, to forward the nomination in proper time, and consequently it was refused. With regard to what our worthy Member of the Council, Mr. Mulvey, has said in reference to last annual meeting, I think it was out of place for the President of the Royal College of Veterinary Surgeons to take a vote on so serious a question at such a small meeting.

Mr. MULVEY: The President did not allow it, except on extreme pressure. There were one or two members who would not sit down, and, as a matter of courtesy, he allowed it.

Mr. ELPHICK: I maintain he had no right to take the feeling of the meeting on so momentous a question. It is a well-known fact that a great many

of the members of the profession who take a great interest in it were unable to attend. I was one, and several others, who feel as strongly, were unable to go; and we know the feeling in London, especially amongst a great many of the members of the profession, is entirely against the rescinding of the Ninth Clause, and therefore I think we would not get a genuine expression of feeling upon it. As far as I know, in regard to my own nomination, there were several gentlemen in London who were very careful to attend at the Royal College of Surgeons, and watch the nominations as they came in, to see, if any were five minutes or a few hours late, they should be thrown out. That happened in my case.

Mr. DUDGEON: How many days, hours, or weeks?

Mr. ELPHICK: I think my nomination was received next day. I would urge that, if the Royal College of Veterinary Surgeons wish to take the feeling of the profession, they should ask the profession in a fair and straightforward manner. No notice was given that the question was coming on at the annual meeting, and it was brought in by a side door.

Mr. MULVEY: Certainly not.

Mr. ELPHICK: They never gave any notice.

Mr. MULVEY: They did not intend the matter to come on; it was sprung on the Council entirely.

Mr. ELPHICK: Still, there was no notice on the agenda paper that this was going to be brought forward, and therefore I say it was illegal. Therefore, also, they could not take that as the feeling of the profession, and consequently members of the profession have no right to take that vote as a definite one. Let them appeal to the whole of the profession in an honest, straightforward manner, and not come to a meeting without notice, a meeting which may be packed—not that I care two straws, for it will not affect me either one way or the other.

Mr. DUDGEON: I was very much gratified and very much pleased that our worthy President should give so good an address, which was just what I expected. It was not such a long address as they had sometimes seen, but it was noteworthy, at any rate, for good, sound common-sense, and puts the business, if I may so speak, of the profession pretty thoroughly before us. As to this Clause IX. the truth of the matter is, one gets almost tired of discussing it. We have given our opinion on the subject so often that I think it is hardly necessary to go over it again, and I begin to think that, after all, the agitation which has been got up will end in nothing, because I believe there is a majority of the Council in favour of continuing the clause, and that they will do all they can to let the Supplementary Charter—the Ninth Clause—stand as it is. I agree with Mr. Elphick that the opinion taken at the annual meeting goes for very little, and I understand Mr. Mulvey's feeling when, after advocating the rescinding of the clause, he found so few at the annual meeting supporting it. I have only been at two annual meetings. The first was at Edinburgh. I expected to have seen a large gathering, and the real truth of the matter was, that there were more members from this side of the Border than there were from the North. I really thought it showed that members took very little interest in what was going on in the profession. Three years ago I was at the annual meeting in London, and the apprenticeship Clauses came up then. With regard to the Ninth Clause, I do not know that we can do more than we have done. Our opinions are well known. I believe our representative on the Council takes good care that the Council knows what we think of it, and all we can do is to leave it in his hands to do what he can for us. But I fancy it will all end in nothing. One part of the President's address I am pleased with. This part referred not only to the Contagious Diseases (Animals) Act, but the inspection of slaughter-houses, meat, etc. That was a subject we are all very well agreed upon. I

fancy there is no doubt that everybody will allow that the veterinary surgeon is the proper person to have these under his care. I do not know that there is anything we can do, excepting to bring our influence to bear on the public at large, and by pegging on in a persevering way we will get a great many of the things we are looking forward to. I have long contended for this. At one of the very first meetings of this Association I contended for these very same things that the President is contending for now, and although we have not got them yet, if we keep on contending for them, in all probability the time will come when we will get them. We ought to be very grateful to our President for giving us such a common-sense address. I am certainly very sorry that any mistake should have occurred in regard to Mr. Elphick's nomination, because if we had got him in, we would have had another to have stirred up the Council. But accidents will happen, and we cannot say anything more about it. It is an unfortunate circumstance, but as far as I can see, there is no one to blame for it.

Mr. ELPHICK : What Mr. Dudgeon has said in regard to meat inspection, inspection of slaughter-houses, etc., there is a good opportunity to take some action now that there is some agitation going on with reference to forming a new public abattoir. It would not be out of place, as members of the veterinary profession, if we were to send a resolution to the Town Council of Newcastle in favour of something of the kind. I think this would show them that we, as the veterinary profession, take an interest in it, and that it is a step in the right direction. The butchers and cattle salesmen are opposing it tooth and nail, for the reason that it would affect their interests to a certain extent. But the interest we have to serve is that of the public at large. It is only by having a public abattoir, and a veterinary surgeon to look after it, that it could be guaranteed to the public that what they eat is good, sound food.

Mr. MULVEY : I support those remarks, and, if they are put into the form of a motion, I will be pleased to second it.

Mr. DUDGEON : Would it not be as well if there was a committee appointed on the matter, as if there was some resolution passed in this meeting to be sent to the Town Council stating that a new public abattoir was a step in the right direction, and at the same time impressing upon them the necessity of having the place, when they do get it established, placed under proper veterinary inspection? As a matter of course, the motion had better come from Mr. Mulvey, with myself or some one else supporting it—Mr. McGregor for instance—as it may be said we are fishing for a job.

Mr. ELPHICK : I would rather have an independent place, because I am sure a veterinary surgeon having charge of an abattoir would have his hands fully occupied in order to do ample justice. I think a public abattoir is a step in the right direction, and I have no doubt anything sent from this meeting would go very materially towards assisting the project.

Mr. MULVEY : Has anything been settled?

Mr. ELPHICK : It is only a scheme. It may not come now, but it will eventually, and a little support from us may make it come sooner.

Mr. MULVEY : In order to put it into something like shipshape, I have the pleasure to move that a committee be formed to draw up a resolution to present to the Town Council of Newcastle, asking that a veterinary inspector be appointed as inspector of meat, dairies, and slaughter-houses.

Mr. ELPHICK : That, I think, looks rather like fishing for employment for the veterinary profession. I think we should not say anything about that, but just give an opinion on the establishment of a public abattoir in Newcastle, and recommend that a competent veterinary surgeon be appointed for the supervision of both live and dead animals.

Mr. MCGREGOR : I think I would leave out dairies. A veterinary surgeon could not go through the whole of the dairies.

Mr. ELPHICK : If a veterinary surgeon were appointed whose sole duty would be to attend slaughter-houses and dairies, he would have sufficient to do without anything else.

Mr. MULVEY : It is a question of periodical inspection, and I think dairies are more particular than anything else.

Mr. DUDGEON : Leave it in the hands of the committee.

It was resolved that a committee should be appointed for the purpose indicated, and the following gentlemen were appointed to the committee :—The President, Mr. McGregor, Mr. Gofton, Mr. Mulvey, Mr. Moore, and the Secretary.

Mr. DUDGEON : Most Town Councils get their medical officer to do this, and save expense.

Mr. MOORE : And he is only called in in cases of dispute. No one calls in the veterinary surgeon unless somebody disputes the justice of the seizure.

The SECRETARY read the final portion of Professor Robertson's paper on "Intestinal Helminthiasis"—the part relating to diagnosis and treatment—which the Professor had been unable to finish at the last meeting.

The PRESIDENT : I think the Professor has given us a very interesting paper, and I hope we will have a good discussion.

Mr. GOFTON : After the last meeting there appeared in the papers considerable information as to the treatment of this kind of thing. I do not think we are doing ourselves justice in putting into the papers matters concerning treatment and practice.

Mr. MCGREGOR : Do not you think there is a journalist in the town who gives treatment.

Mr. GOFTON : This was from Professor Robertson's paper.

Mr. ELPHICK : There was a short paragraph in the *Journal;* but they could not give the symptoms or treatment, because that was not read.

Mr. DUDGEON : There was no treatment at all given at our meeting.

Mr. MCGREGOR : What harm will it do when you have one of our profession writing regularly to the papers !

Mr. ELPHICK : Professor Brown's action will do us more harm than what Professor Robertson may say.

Mr. MULVEY : You are right as far as you go ; but it is a matter of principle. I do not think it will do any harm.

Mr. ELPHICK : I think it will do good. It is a great deal better than members of the profession hawking physic balls in their pockets and visiting patients five miles off for half-a-crown.

Mr. MULVEY : That can only apply to some of your Newcastle men.

Mr. MCGREGOR : I think Professor Robertson mentions some of the most extraordinary accumulations of some of the Intestinal Helminthiasis. I can give you two cases which one would scarcely believe. In one horse, that had died through ruptured bowels, they were actually packed into the intestine and twisted round in a rope, so that nothing could pass them. There were more than a whole pail full. He could hardly have believed any one else who told him of the case. Another case of the same kind was nearly equal to it, and the most extraordinary thing was that the horse never passed one. When you see them pass these long worms it is easy enough to get rid of them.

Mr. DUDGEON : It is a subject that I do not know much about. I remember a case of a yearling dying from a twisted bowel. In making the *post-mortem*, I was struck by the fact that the small intestines were perfectly solid. When we took hold of them it was like taking hold of a piece of wood. They were completely packed with these large worms. How the animal could have lived as long as it did was a puzzle to me ; for how any thing could travel along the small intestines seemed a marvel. The animal

was on a rather poor farm, and where the greater part of the stock were not very liberally dealt with. Both horses and cattle were rather poor. But it was not on damp, marshy land; in fact, it was close to Hylton Castle, and, therefore, rather high-lying land. With regard to this same sort of worms, you come across them in pigs. There are cases where the intestines of pigs are pretty well crammed full of them. You very often find people telling you, when a horse has got worms, that they think it is thriving badly; but, as a rule, horses passing these large worms very seldom seem to suffer much from them. I have known dozens of horses pass these big worms and never seem to ail anything. I have had horses under my care and in a certain stable for years before they ever were noticed to pass these worms. The query is, Where do they get them from? how have they been generated, or how have they got there? When you get a new horse, and find that he has, perhaps, come off poor land, you have some sort of idea how they have come about. But if you have a stable where the feeding is all that could be desired it seems rather singular, and I confess I have been a good deal puzzled by it. I have seen a case of almost genuine tape-worm at Ryhope. There was some particular sort of lameness in the animal. On opening the intestines there were one or two peculiar forms of worms with heads, the same as you see in the tape-worm of the dog. It was the only thing approaching a tape-worm in the horse. There is another sort of worm, but I confess the names of them are a long way beyond my comprehension. There is a certain worm, about an inch in length, which we sometimes get in young and poor ponies. It prevents them thriving, and is often fatal. I do not know but that the course laid down by Professor Robertson is as good as anything; but I do not think there is anything better than iron. It is a good tonic, and in the majority of cases it kills the worm. But, as I said before, I have not had much to do with it, and have not been much troubled with it.

Mr. MULVEY: The subject of Helminthiasis is very interesting, and Professor Robertson has gone into it fully, not that he has brought before us anything particularly new. His treatment has much that we have all been used to for many years. These cases, no doubt, occur with us all, but the difficulty was in diagnosing them. There are many cases of occult disease that are, no doubt, due to intestinal parasites. I remember one case in particular, in which the symptoms were almost those of irritant poisoning. I was, in fact, at one time under the impression that some foul means had been at work. The *post-mortem* revealed the stomach almost one mass of ulcers. This was caused by bots, which were present in such numbers as to produce erosions all over the stomach, which gave it the appearance of having been caused by an acid. It shows how easily you may be misled in cases of this kind. The little specimen exhibited is one I came across rather peculiarly in making a *post-mortem* in a case of Swine Fever. It is a piece of Swine Fever lung. In making an incision they literally sprang out of it, and they were present in thousands. I could scarcely have believed that so many pigs were the subject of bronchial parasites, but, as you are aware, I have had a great number of cases of Swine Fever for some time past, and have, consequently, made very many *post-mortem* examinations.

Mr. MCGREGOR: I have seen the coats of the stomach eaten right through by bots, but only in foreign ponies and ponies from the South of England, because they could not live in our county. I have never known bots in any of the ponies bred here.

Mr. MULVEY: Oh yes; scores!

Mr. MCGREGOR: I have never seen a Northumbrian born-and-bred horse with them.

The CHAIRMAN: I think this Association feels deeply indebted to Professor Robertson for bringing the subject before us. It is one of very

great interest. No doubt we all meet with cases of intestinal irritation caused by these parasites. Lately I have had great mortality amongst ponies down the pit. It was a new shaft, sunk about twenty fathoms deeper than the old one. I could not make out the cause of this mortality in the ponies. They died suddenly, without symptoms of previous illness. They came into the stable, refused their food, and, before I could get to them, they were down, and no medicine had the slightest effect. The ponies were recently introduced into the mine. I suspected the air was not very pure, and I had the water analysed, and found it very detrimental to the health of animals, being largely impregnated with chloride of barium (?), which is an irritant poison. Animals who have been in the mine for ten or twelve years are troubled with these worms. In making *post-mortem* examinations, I found scores of them in the animals that had been down the mine that time, and fed in the usual manner with dry fodder. On cutting open the bowel, they have presented themselves hanging on as firm as could be. Then, in regard to the treatment, a specimen is exhibited of what is commonly called wire-worm. This was received from a retriever pup about fifteen weeks old. There were seven pups at one litter. The symptoms they presented were simply that they were off their meal, and there was a peculiar yellow appearance about the eyes—in fact, the keeper said that they were taking the Yellows, which is very common amongst pups. By administering some areca powder, castor oil, and a little milk, these were taken from one pup, and the others passed equally as many. These came all away in a lump. They are not all that was passed by the pup at the same time, but they are just a single sample of what did come away. Now, it is rather a remarkable fact that young pups fourteen or fifteen weeks old should present such symptoms, caused by Helminths. They are what dog-men most generally call Yellows, a sort of Jaundice in dogs. I have been called in to treat them, and I never could find out what it was until I made a *post-mortem*, and then I found them filled with these wire-worms. These pups are doing well, and growing and thriving, showing that these Helminths are really the cause of so much mischief and mortality amongst them. This is a case which veterinary surgeons who have large canine practice should bear in mind—young things presenting the symptoms of wasting, dulness, and a kind of comatose state, with the abdomen distended, and the nose dry, you can almost be certain these worms are there, and causing the symptoms.

Mr. MULVEY: I can confirm the President's account of the frequency with which these wire-worms are present in pups. A little dachshund pup of my own passed almost a pint in the course of two days.

Mr. MOORE said: I have great pleasure in proposing a hearty vote of thanks to Professor Robertson for his interesting paper.

Mr. MULVEY: I have great pleasure in seconding it. Professor Robertson certainly put himself to a very great deal of trouble and inconvenience to come down here from London, simply for the purpose of edifying members of an association like this, and I am sure he deserves our hearty thanks.

Mr. DUDGEON: I support the motion. I believe we did pass a vote of thanks in the Professor's presence; but if we now record it in our minutes I think it will show that we have not forgotten him, and I think we have great reason to be grateful to Professor Robertson and those who come at times and read scientific papers to us old country fogies.

Mr. ELPHICK: I have pleasure in rising to support this vote of thanks. I think it would not be out of place if the Secretary were to write a letter to him expressing our thanks for his trouble.

The motion was carried, including Mr. Elphick's suggestion, and the proceedings then terminated.

CENTRAL VETERINARY MEDICAL SOCIETY.

AN ordinary monthly meeting was held on the 6th May, Mr. F. W. Wragg, the President, being in the chair. Eight Fellows were present, also three visitors. After minor business the President announced that the subject under consideration was Equine Relapsing Fever, as treated of by Mr. Steel, in the printed essay sent to the Fellows of the Society; he then drew attention to the specimens of the parasites found in the blood of mules suffering from Relapsing Fever, which specimens were microscopically exhibited by Dr. Griffith Evans.

At the request of the President, Dr. EVANS commenced the discussion. Among other remarks, he said the disease assumed dissimilar forms in different localities, the malady as found in Burma wildly varying from the same disease as it existed in the Punjab. Mr. Steel had found it in another and acute form among ponies at Poona. The parasites found in the blood are very active, and markedly voracious; two or more may be seen to fasten on to a blood-corpuscle and disintegrate it. They always attack the corpuscles by the same end of their body, which may, therefore, be presumed to be the head, at the other extremity appears to be a whip-like tail; and this idea is confirmed by the fact that the surrounding blood is sometimes seen to quiver for a considerable distance to the rear of the parasite. Relapsing Fever has been known among the Punjab Frontier force for a long time, and in some years it has wrought considerable havoc. About twenty years before Dr. Evans was there, one of the native princes was said to have lost three hundred horses in one year from this complaint alone. He had been told by Dr. Haye, of the Indian Medical Department, that a very similar disease had been observed in Persia among horses which were living under the same condition of surroundings as those in the Punjab, eating the same kind of food, and drinking water of the same description—that is, from irrigation channels. The Dera Ghazi Khan district was, he said, almost rainless, the rainfall not exceeding two inches annually, so that water could only be obtained easily by breaking up the hill streams into numerous channels; this was not the case in Burma, which was a rainy district. He agreed with the essayist that all treatment tried had been found useless. The natives attributed the spread of the malady to a fly, called the "Burra Doon" (on account of its long sting). It was probably a simple coincidence that the disease appeared at the same season as the flies, though he thought it possible that the flies did aid in transmitting it from one animal to another.

Mr. RAYMOND said he thought that the evidence before the meeting proved that the parasite was a description of fungus, and that Mr. Steel had rightly described it as a spirillum; were it an oxyuris it could not be conveyed from one animal to another by inoculation; the parasite had two flagellæ, one at each end, and also spores upon it at certain intervals. Looking at the course of the disease, it appeared probable that the original parasites died after a short period, and that fresh crops arose from the spores detached, the several febrile relapses marking each maturing of a parasitic crop.

Mr. PENBERTHY asked if Dr. Evans considered that "Surra," or Equine Relapsing Fever, was identical with Cerebro-spinal Meningitis, as Mr. Steel had suggested in his pamphlet? Also whether it was in the disease under consideration that he found the parasite called a spirillum, afterwards called *Filaria evansii?* It appeared to him that "Surra" and Human Relapsing Fever were identical. In the latter malady the liver and spleen were chiefly affected, but in Cerebro-spinal Apoplexy, of which he had some experience, the symptoms of nervous disturbance were the most marked features.

Dr. EVANS said that his experience of the latter complaint had been so slight that he could not give a definite opinion as to the identity of the two.

Mr. Steel had said he found similar parasites to those which he discovered in Burma among some ponies suffering from what he called Ordinary Spinal Meningitis. The Filaria alluded to was quite a different thing. He had been shown some camels said to be infected with "Surra," and five of them were placed at his disposal for investigation. Four suffered from "Surra," but the fifth did not, but harboured in its blood the embryos of Filariæ.

Mr. PENBERTHY said he was struck by the fact that the Relapsing Fever of equines and Spirillum Fever of man produced the same symptoms when inoculated into the monkey, thus showing a close relationship between the maladies.

Dr. GRIFFITH EVANS read several extracts from his report on the disease, and from a work by Dr. Lewis on the subject of "Blood Parasites." He also showed the Filaria preserved in portions of the lung of the camel.

ALFRED BROAD, *Hon. Sec.*

The following is the paper on

"EQUINE RELAPSING FEVER."

I.—*The Exact Nature of this Disease and its Natural History is now before the Profession.*

(*a*) In his "Report on Surra" (VETERINARY JOURNAL, 1881—2), Dr. Griffith Evans introduced it to science, and described its authentic nature; its prevalence among horses, mules, and camels in the Punjab; its being due to remarkable parasitic organisms in the blood; its occurrence in the camel; and its inoculability from equine to equine, or to the dog. Dr. Evans' observations were on the North-western Frontier of India among *horses* of native cavalry.

(*b*) In my "Report on My Investigation into an Obscure and Fatal Disease among Transport Mules in British Burma" (1885), I confirmed Dr. Evans' observations; investigated the disease among transport mules and ponies in the south-eastern portion of the Indian Empire; discovered it to be a true Relapsing Fever; discovered its communicability by inoculation to the monkey; worked out its relations with Human Relapsing Fever; propounded the exactitude of its diagnosis by microscopy and thermography; and established the relations of the parasitic organism, as regards number and activity, with the fever phases, giving strong reason to believe that the organism is the contagium.

(*c*) In a paper on "Relapsing Fever of Equines," read by me before the Bombay Medical and Physical Society (September, 1885), I examine the disorder from a comparative point of view, and conclude that "the human and equine disorders are both to be rightly included under the Pathological Class Relapsing Fevers. They agree very closely in their *general* characters, but they differ specially, probably in accordance with difference in species between the blood organisms in the two." I provisionally classify the Relapsing Fevers as follows:—

RELAPSING FEVERS.

- I.—HUMAN
  - *Natural* in man.
  - *Induced*
    - (naturally) in man.
    - (artificially) in monkey.
- II.—EQUINE
  - *Natural*
    - in horse and mule (Surra).
    - in mule and pony (British Burma disease).
  - *Induced* (artificially) in
    - mule and pony.
    - monkey.
    - dog.
- III.—CAMELINE (possibly the same as II.).
- IV.—OF ELEPHANTS. (?)
- V.—OF RODENTS. (?)

(*d*) In an article on "Relapsing Fever" for Koch's "Encyclopædia of

Veterinary Science" (furnished through V.S. Fred Smith, but which I have not yet seen in print), I introduce the disease to the German reading professional public.

(*e*) In a "Report on an Outbreak of Relapsing Fever among the Poona Transport Ponies, 1885" (not yet published), I furnish striking proof of the possibility of exact diagnosis on the lines propounded by me in my British Burma report; I establish the position of Dr. Evans and myself that the disease is much more widespread and of more serious import as affecting army animals in India (and probably throughout the world) than has hitherto been supposed; I show that the disease among Indian baggage ponies and in the western part of India differs in some important respects from that studied by me in Burma, but not essentially; finally, I had obtruded on me the quite unanticipated view that Relapsing Fever is identical with the disease graphically described by Robertson as Cerebro-spinal Fever, or Cerebro-spinal Meningitis.

(*f*) I have submitted to Dr. Vandyke Carter a small "Report on Experimental Researches with Organism-infested Rats," in which I show reason for the belief that such rats suffer from Relapsing Fever, and that the system of the equine patient resists the action of organisms introduced subcutaneously or by intravenous or intraperitoneal inoculation, just as I had concluded that the system of oxen and goats resists the organism of Relapsing Fever of mules.

Thus I have reason for stating that the disease is now fairly before the profession. This somewhat wide literature embraces matter sufficient to render our knowledge of Relapsing Fever (Surra) considerable and not unworthy of contrast with that of Glanders, Anthrax, and other specific disorders which have been much more widely studied and much longer known to science. I contend that it is inferior to none of these disorders in practical importance and pathological interest, especially in India. Dr. Carter, in relation to Spirillum Fever (Human Relapsing Fever), Dr. Evans, and myself, may feel a little satisfaction that we have been the means, in investigating and reporting on these Relapsing Fevers, of repaying from the East some of the huge debt of gratitude for increment in medical knowledge obtained from the West. If Surra, from the researches of scientists in Europe and America, proves to be "Cerebro-spinal Meningitis," our pathological results will have a practical, as well as theoretical, world-wide importance.

II.—*There are facts about Relapsing Fever which render its Study most Important in its Bearings on the General Progress of Medical Science:—*

(*a*) *I contend that its contagium has been proved and demonstrated, in so far as proof can be given in such a matter.* My researches on mules in Burma tended to the aphorisms—(1) "No Relapsing Fever without Spirilloids"; (2) "No Spirilloids without Relapsing Fever"; (3) "Activity of the organisms, high temperature readings"; (4) "Quiescence of the organisms, little or no fever"; (5) "Ferocity of the organisms, blood disintegration, and exhaustion of the patient." In no other specific disorder do we find that the presence, number, activity, and active hostility to body elements of distinguishable micro-organisms is in such exact and direct relations with the clinical features. Nowhere is there traceable so exact a sequence of cause and effect as in the presence of Spirilloids in the blood of Relapsing Fever patients, and the gradually but surely cumulative effects of successive fever doses to those patients.

(*b*) *My paper, read before the Bombay Society, expresses in a crude manner the views I hold as to the high place Relapsing Fevers will occupy in comparative pathological studies in the future.* We have in Relapsing Fevers the opportunity afforded us of studying the induced Human disease and the induced Equine disease in a common habitat, the monkey's system; from

this we can exactly determine the general and essential characters of Relapsing Fevers and specially distinctive features of the Human and Equine diseases. We can further compare the equine disease as it occurs in the monkey, dog, and horse, and thus determine which are its essential characters and which are the features which it owes to the zoological differences in habitat, whether it be the system of an omnivore, a carnivore, or a herbivore. The human disease admits of similar study, to a limited extent, for Dr. Carter has investigated it in the man and in the monkey; here, then, we have a little scope for deduction of essential characters. It is not Human Relapsing Fever in man which we compare with Equine Relapsing Fever in the mule, but Human Relapsing Fever (man and monkey) which we compare with Equine Relapsing Fever (horse and monkey and dog).

(*c*) Further, *I think we shall in Relapsing Fever (as in Anthrax and Glanders, for example, but as has been specially done in the case of the variolæ) find an excellent field for the study of the influence of species on the disease, and not only of species, but also of variety and manifestations of hybridism.* The disorder has been carefully studied in Punjab cavalry horses, Burmese ponies, mules imported from India to Burma, and transport ponies collected from various parts of the Western Presidency of India. This is a phase of my subject which will admit of more extended treatment elsewhere.

(*d*) If it be proved that Cerebro-spinal Fever (Robertson) is Surra (Evans), or Equine Relapsing Fever (Steel), what *an excellent field will be afforded for study of the geographical variation in disease.* But already we have some proof, of considerable geographical range, apart from its possible occurrence in the Nile Delta, in Assam, and in Australia, we have its *certain* prevalence in the Dera Ghazi Khan district 70° longitude E., at Poona 74° E., and at Rangoon and Younghoo with longitude 95° E. The latitude ranges from Rangoon at 170° N., through Younghoo and Poona at 18°-19° N., to Dera Ghazi Khan at 30° N. Its range, as *proved*, is thus 250° longitude by 13° latitude—as far eastward as from Greenwich to the centre of Bulgaria, and as far southwards as from Greenwich to Lisbon. So great a scope does the Indian Empire afford us for study of the geography of disease that *within its borders* Relapsing Fever has been found to have a range as great as two-thirds of non-Russian Europe!

(*e*) The remarkable facts that the Burma mule disease (which proved in each experimental case fatal to mules, ponies, a dog, and a monkey) caused but trivial disorder (if any) in the bullock and goat, and that rat-organism introduced into the systems of ponies caused, at most, trivial evanescent disease, point to *possibilities of producing* (*as our knowledge increases*) *such a resistent state of the systems of mules and ponies against this hitherto invariably fatal disorder as are enjoyed by the bullock and goat.* To leave for a moment the stern line of facts and indulge in a dream of possibilities, which may yet be verified, let us consider what a grand triumph for pathological science and practical veterinary surgery it would be, if I could establish that inoculation of transport ponies and camels, and of cavalry horses with the spirilloid-infested blood of rats secured them immunity from Relapsing Fever in known fatal localities, such as the Dera Ghazi Khan district and the Irrawaddi Delta.

(*f*) *By establishing the occurrence of a Relapsing Fever in Equines* (*and possibly, too, in Rodents*) *differing in some essential features from the Spirillum Fever of man, we have advanced Comparative Pathology, not only regarding to the list of animal disorders, but by raising Relapsing Fever from the isolated species which it constituted to the dignity of a Pathological Genus,* corresponding to Anthrax and the Variolæ. Thus another opening is afforded for the advancement of Comparative Pathological study on a scientific basis. (*To be continued.*)

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting was held at the Blackfriars Hotel, Manchester, on June 9th, 1886.

Present: Thos. Briggs, Esq. (President), Messrs. W. A. Taylor, T. Hopkin, S. Locke, W. Dacre, W. Woods, jun., A. Lawson, A. Darwell, Jas. Hart, J. B. Wolstenholme, Jas. Marshall, A. Leather, G. Gartside Mayor, J. W. Bennett W. H. Bridge, J. Faulkner, J. Platt, and J. W. Ingram.

Visitors: Messrs. C. T. Barnes and Jas. Urmson.

Letters of excuse for non-attendance were received from Professors Williams and Walley, Messrs. P. Taylor, H. Ferguson, and J. B. Polding.

Mr. LOCKE proposed, seconded by Mr. WOLSTENHOLME, that the words *with a small majority* be struck out of paragraph X., referring to the candidate of the Midland Veterinary Medical Association, in the minutes of the last quarterly meeting. Carried.

Mr. W. A. TAYLOR proposed, seconded by Mr. HOPKIN that the numbers by which the resolution was carried (see paragraph VI. of the Special Meeting, April 5th, 1886), be entered in the minutes, viz., 13 for and 7 against. Carried.

The minutes as altered were then confirmed.

Letters were read from Messrs. E. Faulkner and J. S. Hurndall, tendering their resignations as members of the Association.

Proposed by Mr. A. LAWSON, seconded by Mr. HOPKIN, that the consideration of the above be left over until the next meeting. Carried.

Mr. BRIGGS proposed, seconded by Mr. HART, that Mr. J. E. Ainsworth, M.R.C.V.S., Bury, be a member of this Association. Carried unanimously.

Mr. WOODS, jun., proposed, seconded by Mr. DARWELL, that Mr. J. W. Bennett, M.R.C.V.S., Leigh, be a member of this Association. Carried unanimously.

Mr. W. A. TAYLOR proposed, seconded by Mr. GARTSIDE MAYOR, that Mr. Greaves be written to asking him to reconsider his resignation as a member of the Association. Carried.

The PRESIDENT in giving his reasons for persisting in resigning the chair, said: He did not see how he could consistently continue to preside, when he was in a minority upon a vital question. Without wishing to enter into arguments, anent the Ninth Clause, he would content himself by saying his views were already well known. He could assure all, that he was not actuated by any pique or ill-feeling; he had no intention of resigning his membership of the Association; he simply felt that he would be better in a side seat, and preferred to be free to fight when the question came before them again, as he anticipated it would later on in the year.

After hearing the President's reasons for desiring to resign the chair, Mr. DACRE proposed, and Mr. A. LAWSON seconded, that the resignation be accepted, which was agreed to.

Mr. W. A. TAYLOR proposed, seconded by Mr. HOPKIN, that Mr. H. FERGUSON be the President for the remainder of the year. Carried unanimously.

Mr. G. GARTSIDE MAYOR then read his paper on

HYPODERMATIC MEDICATION.

Delivering the inaugural lecture at the Royal Veterinary College in 1849, Professor Spooner confidently predicted that the day was not very far distant when the veterinary surgeon would be remunerated in proportion to the rarity of disease amongst stock over which he had medical charge.

Far be it from me to attempt to deny the value—the incalculable value of

preventive medicine, in which, as is common knowledge even amongst the laity, stupendous have been the strides since that day.

Far be it from me to say that we should, as a profession, simply aim at what a great Church dignitary a few years ago somewhat contemptuously styled, "mere pot-boiling knowledge." But, gentlemen, without the least hesitation or sham, I confess, that since I commenced the study of our common profession, Therapeutics, in the ordinary acceptation of the term, have engrossed the major part of my attention.

I think none here will gainsay me when I express the belief, that Professor Spooner's millennium—if I may so term it—is yet very far off. Be this as it may, however, I can, for my own part, most thoroughly and entirely endorse and adopt the expressions let fall by Dr. Alfred Meadows in his address to the British Gynæcological Society in the early part of this year: "I am, myself, a firm believer in the use of drugs; to me practice would be shorn of its greatest attraction if I did not feel confidence in the things I prescribe."

Firmly holding this opinion I maintain, without hesitation, that in no way known to us at the present day can we so certainly, easily, safely, and rapidly establish a medicinal action as by that mode of administration termed Subcutaneous, Hypodermic, or most correctly Hypodermatic.

Although I purpose in what I have to say to you to deal mostly with what I have myself observed, yet I am sure I cannot do better here than quote to you what Dr. Bartholow says in the introductory portion of his most valuable and interesting work on this subject; and I take this opportunity of warmly recommending that book to the perusal of all present, who do not already possess it.

"The systemic effects produced by the hypodermatic injection of remedies must now be compared with the stomachal administration. A remedy entering the blood through the stomach is affected in its physiological and therapeutical action by the condition of that organ. Disease—for example, gastric catarrh—may hinder, if not entirely prevent diffusion through the mucous membrane. The rate and extent of absorption are influenced by the presence of other ingesta, by the state of repletion of the veins, and by the condition of the liver. The digestive fluid undoubtedly exerts a chemical action on many remedial agents, forming combinations sometimes more, sometimes less powerful. Again, as the state of the nerves has an important influence on absorption, it is obvious that those remedies which depress the activity of nerves must constantly lessen, by repetition, the power of the stomach to convey them into the circulation. On the other hand, when a medicine suitable for the purpose is thrown under the skin, its physiological and therapeutical effects are produced in the fullest degree and in the most characteristic form.

It follows that the therapeutical properties of a drug must differ not only in degree, but also in kind, according as it enters the blood through the stomach or by the subcutaneous areolar tissue.

Experience and observation abundantly demonstrate the truth of this statement. The subcutaneous use of certain drugs has developed very valuable therapeutical properties, which the stomachal administration had not even suggested. Bernard affirms that this mode of administering remedies, which has hitherto been the exception, must become the general method for the use of active principles. The advantages of this method over other methods, considered from the point of view of practical therapeutics, are manifold.

The effect is produced more speedily, and the whole effect of the quantity introduced.

The results are more permanent and curative.

Gastric disturbance rarely occurs, and irritation of the stomach is avoided.

The administration may be made to those unwilling or unable to swallow.

I feel, as many in my position have done before, that I am unable to deal with the subject so well as it deserves, but if by what I have to say I fail in convincing at least some here how undeniable the practical value, how great the possibilities, how vast the probable future of hypodermatic medication, then, gentlemen, blame the advocate, not his cause, and, when I fail, may some abler hand take up the task.

The essential principle of hypodermatic medication has been recognised from very early times—for what is preventive inoculation but an application of hypodermatic medicine—and Dr. Fleming tells us that a crude form of inoculation for Small Pox has been practised by Arabian mothers from time immemorial, and it is well-known that the same operation was introduced into this country more than a century and a half ago, chiefly by the efforts of Lady Mary Montague.

Cattle poisoners in India have for a long time been only too well acquainted with the deadly certainty of the introduction beneath the skin of toxic agents.

In the toxicological researches of Majendie and others, we see the extension of the principle ; but for Dr. Wood, of Edinburgh, in 1843, or, according to Bartholow, for Drs. Taylor and Washington, of New York, in 1839, was reserved the honour of introducing what may fairly be regarded as the recognised use of the subcutaneous tissues as a medium for curative medication.

At that time, and for years afterwards, Morphia alone was employed in this way, but the list of drugs thus utilised has already reached scores, at least, and is being extended almost from day to day.

It would be quite impossible within the time at my disposal to exhaustively treat the subject I have taken up ; so I purpose chiefly to deal with those agents I have most used myself, and *especially* those applications of them which I believe to be the least well known.

Hypodermatic medication is especially valuable to us as veterinarians in many ways.

By this means we can sooner than by any other capable of general application, produce definite medicinal action. By this means we can secure the full physiological and therapeutical action of drugs without drenching, overloading, and nauseating the system with medicinal agents. By this means producing their full effects with a fractional portion of the dose required by ordinary channels, we have at our command many active principles of drugs which otherwise would be practically out of our reach by reason of prohibitive price. By this means we can *certainly* secure such action in many cases when, from various causes, ordinary modes of application fail us more or less completely—as, for example, in Tetanus, when the jaws are firmly locked ; in various cerebral disorders, when the power of deglutition is much impaired, or even wholly lost ; or when the frantic state of the animal renders ordinary administration of medicine utterly or well-nigh impracticable ; in paralysed states of the alimentary canal, when agents introduced therein do not become absorbed ; in cases of impaction of the œsophagus, when muscular spasm is most intense ; when prostration is so utter that our poor patients cannot bear the exertion of taking medicine in any other way without too great a strain upon the fluttering powers of life to be at all justifiable ; in short, in extreme cases of almost every kind the hypodermatic syringe stands us in good stead —nay, more, is an ally simply invaluable.

It can hardly be necessary for me here to enter into any details as to the instrument and preparations required. The former can, of course, be procured from any respectable instrument-maker, while druggists innumerable

will furnish reliable solutions of standard strength, or those with time at command, or a desire to study economy, can easily prepare the solutions for themselves.

No doubt the system now largely in vogue amongst the medical profession of soluble tablets, containing each a certain dose of the agent or agents required, is the most absolutely satisfactory; but, considering the circumstances under which veterinary surgeons and their patients are usually placed, I think we may—for the present, at least—content ourselves with well-prepared solutions, taking care not to keep them too long, the use of glycerine as a part of the solvent, or the addition of a minute quantity of carbolic acid, assisting materially in the preservation of the activity of the agent.

As to the operation itself, it is so simple that I presume every one here knows how it is done. The most convenient situation usually is in the vicinity of the cariniform cartilage of the sternum ; but in cases where repeated doses are required, it is well, in order to avoid needless irritation, or even in some rare cases suppuration, not to re-inject in quite the same place.

Injection into the substance of muscles or other organs may be practised with considerable advantage in some cases ; as, for example, when the agent introduced is rather irritating to the tissues, as are digitalin, quinine, etc. ; when a localised action is desired, as in cases of Paraplegia, or, recently practised on the Continent, direct injection into the larynx and substance of the lungs in disease situated in those different organs respectively.

Where, however, immediate action is desired the subcutaneous tissue, or even the veins themselves, affords the best channel of access.

I have purposely not dealt with intra-tracheal injection, for I look upon that question as being quite sufficient subject for separate consideration.

We are, of course, all of us only too well aware how great an advantage the human practitioner has over us, in the mutual understanding and co-operation which usually exist between doctor and patient ; but in the use of the hypodermatic syringe, we have clearly the advantage, for our patients do not refuse (or we do not accept their refusal) to endure the slight pain caused by the puncture of the needle, as human ones not unfrequently do ; and even more, we have not the fear of establishing the dread habit of self-indulgence in narcotic stimulation, which not unfrequently deters the physician from the use of anodynes—morphia, in particular—subcutaneously.

In any comparative estimate of drugs used hypodermatically, the first place must, by universal consent, be given to morphia. What more than threescore years ago De Quincey said of its source, opium, may still be said of it :—

" Beyond all other agents made known to man, the mightiest for its command, and for the extent of its command over pain ; the one sole catholic anodyne, the one sole anodyne which in the vast majority of cases is irresistible—

' O just subtle and all-conquering.' "

Every tyro in medicine knows that as an anodyne opium is simply invaluable, and I venture to assert that wherever the stomachal administration of opium is serviceable in that way, then morphia, or better still morphia and atropine, administered subcutaneously is still more serviceable.

In human practice it is often found that morphia alone causes a considerable degree of nausea, or even vomition, which the addition of a small quantity of atropine will almost always obviate. In our patients, of course we are not, for the most part, troubled with vomition, still the conjoint use of the two agents greatly lessens any nauseating effects, and in addition is more potent and lasting in its action. I shall, therefore, consider the use of these drugs together.

To detail the various cases, or class of cases, in which morphia and atropine may advantageously be employed, would simply be to give a catalogue of painful diseases or conditions. I shall, therefore, in this connection make the broad statement that, almost wherever I find a patient of mine suffering violent pain from any cause, then, prior to adopting other treatment, I at once administer a dose of morphia and atropine; this has been my custom for several years now, and I am almost daily becoming more and more convinced of its great value in many, nay more, in the majority of cases; the acute symptoms are very materially allayed by the time that I have cleaned the syringe, and returned it to its case. That this is a great, a stupendous advantage over the ordinary administration of medicine I think none can deny.

Dr. Bartholow says—and my observations lead me to confirm his statement—that in cases where the pain, etc.,to be combated is chiefly within the pelvic region, the effect of atropine should predominate; this practice I have found of great value in cases of difficult parturition and eversion of the uterus; in one case in particular, of parturition in the mare, the action was so extraordinarily successful that I make no apology for stating it a little in detail.

I was called to meet a neighbouring practitioner in regard to a mare in labour; on my arrival at the farm I found the patient to be a valuable five-year-old cart mare; the presentation was three feet, and the point of one hock jammed below the brim of the pelvis, the foal lying transversely. What the straining was like I need not tell those who have such cases to deal with, while those who have not seen difficult parturition in the mare can form no idea of its intensity. Chloroform inhalation was suggested by the veterinary surgeon in attendance, but I recommended the hypodermatic use of morphia and atropine, remarking, at the same time, that the chloroform could also be used if required.

Accordingly, I at once administered morphia six grains, with atropine, two-fifths of a grain, and although the delivery occupied over four hours, our poor patient lay practically quiescent the whole time. Had that been the only case in which I had used the hypodermatic syringe, I should have been grateful to Dr. Wood for ever.

An extremely valuable, and, so far as I know, but little practised use of morphia and atropine, is as a preparation to the inhalation of chloroform; here, again, the advantages to be gained are very great.

The animal much sooner becomes unconscious; consequently, the preliminary stage of excitation being greatly shortened, the struggling is far less, and the risk of our patient injuring itself thereby very materially decreased. The depressant action of the chloroform on the cardiac and respiratory organs is most successfully combated, and the chance of fatal narcosis thereby reduced to a minimum. The quantity of chloroform required in much smaller. The anæsthetic state is much prolonged, and in the case of a single-handed practitioner, the advantage of not being obliged to be continually looking after the inhalation, and thereby delaying his operation is so great, that I feel certain those who try it will not fail to repeat the practice. I will quote one case in illustration. I had to fire a three-year-old cart filly: prior to cutting off the hair I injected four grains of morphia and one-eighth of a grain of atropine. After the hair had been removed the animal was cast in the ordinary way, and the chloroform cap at once put on; preliminary struggling was almost nil, and though I fired both hocks rather severely all round the supply of chloroform was only renewed twice, and the quantity consumed did not reach an ounce and a half; the state of anæsthesia being most satisfactory during the whole time of the operation.

There is yet another advantage to be gained by the practice we are speaking

of, and although this effect is not so observable in our patients as in those of our medical confrères, still it does most certainly exist—namely, that after the state of anæsthesia has passed off the effect of the injection persists for some hours, and so the reactionary shock is not so great, and the animal is saved considerable suffering.

This conjunction of agents was strongly recommended by Professor Fearnley—(in an essay read before the Yorkshire Veterinary Medical Association about fourteen years ago)—in many cases of extremely painful disease, as Peritonitis, Enteritis, etc.

The paper will be found in the *Veterinarian* for October, 1872.

In the occasional cases one meets with of opium poisoning, the use of atropine is much more actively beneficial than any other means. Quite recently I was called to a case where the animal had been drenched with dose after dose of opium, and was in a state of complete delirium with an almost unrestrainable tendency to rush round and round. The injection of one-third of a grain of atropine was of most visible benefit within a few minutes, even the bystanders remarking upon it in less than ten minutes after its administration.

Ether or alcohol, preferably the former, is an agent which has almost magical effects when administered in from one to three drachm doses subcutaneously.

Extreme depression or exhaustion is far sooner and more markedly relieved by this means than by any other with which I am acquainted.

After difficult parturition; in parturient collapse; after profuse hæmorrhage; in fact, wherever prompt and decided stimulus is required, there ether comes most potently to our aid.

There is a class of cases which we country practitioners have largely to deal with in the spring months in cattle after calving, when, either from cold, injudicious feeding, retention of fœtal membranes, or other causes, we have a state of extreme prostration, accompanied by profuse Diarrhœa and total loss of appetite. Many times in these cases have I observed that, almost before the syringe was restored to the pocket, the whole appearance of the patient has undergone a change no less remarkable than satisfactory, and the animal shows more inclination to take food than she has done for some hours, or even days previously. Granted, of course, that this effect is evanescent, at least to a considerable extent, still the production of such a result for however short a time is most valuable.

Those who were present here in September last, when Mr. Faulkner read a most interesting paper upon "Septicæmia," may perhaps remember that during the discussion that followed, I spoke of having frequently had recourse to the hypodermatic use of quinine. I was induced to commence this practice by reading an article in the VETERINARY JOURNAL, by Mr. Macgillivray, of Banff, a few years ago, and since that time I have very frequently administered it with very great satisfaction. The class of cases in which I have most frequently used it has been Parturient Septicæmia in the cow as a result of retention of fœtal membranes, and I have hardly ever failed to observe marked advantage from its use. Its influence on pulse temperature and appetite is alike unmistakeable and beneficial. My usual dose is about six grains, repeated in from eight to twenty-four hours, according to circumstances.

After difficult parturition, more especially if there be any laceration of the genital passages, I very frequently administer several doses as a precautionary measure, without waiting for the advent of septicæmic symptoms.

Quinine may be used subcutaneously with marked advantage in most cases where a tonic is indicated, and in extreme prostration in Influenza in the horse I have often found great benefit from its use.

The greatest objection to its employment in this way in equine practice is, that it is rather an irritant—still this effect may be greatly reduced by making the injection right into the substance of a muscle, and at most the irritation rarely goes further than the production of a diffused hardened swelling, which usually subsides within a few days—although I have known it run on to suppuration in a few cases.

Digitalin is an agent of which I have formed a very high opinion from the few cases in which I have employed it hypodermatically. We are all aware that one of the very great objections to the use of preparations of digitalis by the stomach, is the disturbing effect it usually has upon that organ, diminishing the digestive power, as well as impairing the appetite, in a class of cases where support to the system is of paramount importance. This digestive disturbance can be most certainly avoided by hypodermatic medication, while at the same time we have a more pronounced and decided action upon the heart, thus securing, shall I say, an unmixed good. The superiority of subcutaneous over stomachal administration of medicine is so well illustrated by a recent case of mine, in which digitalin was the principal agent employed, that I think I cannot do better here than give you a few notes on the case, simply detailing such facts as bear upon our present subject.

(*To be continued.*)

Parliamentary Intelligence.

House of Commons, May 30th.

M. PASTEUR'S EXPERIMENTS ON CATTLE.

SIR R. PAGET asked whether the attention of the Agricultural Department of the Privy Council has been directed to the discoveries of M. Pasteur with regard to the possibility of protecting cattle, sheep, and pigs from certain contagious diseases by inoculation with attenuated virus; whether, in view of the national importance of this question, the Department are prepared to undertake a series of careful experiments to determine the value of the discoveries referred to; and whether, with the object of at once dealing with one prevalent form of contagious disease, they will be good enough to commence without delay the requisite experiments in relation to Swine Fever.

Sir U. KAY-SHUTTLEWORTH said the attention of the Agricultural Department has been called to M. Pasteur's investigations regarding the contagious diseases of animals, and, by way of a first step in the direction suggested by the hon. baronet, instructions have been given to Professor Brown to undertake a series of experiments with the virus of Swine Fever.

ABORTION AMONG CATTLE.

Mr. AINSLIE asked whether the Chancellor of the Duchy of Lancaster is aware that Abortion in cattle is contagious, is rapidly on the increase, and annually responsible for the premature death of thousands of calves; and whether he will consider the advisableness of scheduling Abortion in cattle under the Contagious Diseases (Animals) Act.

Sir U. KAY-SHUTTLEWORTH said Abortion among cattle is doubtless a cause of heavy losses, but there is no evidence that it is rapidly on the increase. The recurrence of such cases is due to a variety of causes, including insufficient precautions in cleansing places where it has occurred. But Abortion is not a contagious disease, and does not call for the intervention of an inspector or the slaughter of cattle, and cannot therefore be included among the diseases to which the Act applies.

Notes and News.

THE ANTIQUITY OF PROTECTIVE INOCULATION.—It appears that inoculation for the prevention of the spread of contagious diseases is an idea much older than Pasteur, or even Jenner of kine-pox fame. It is announced that a work by Dr. Vinson records the fact, dug up from the relics of the past, that no less a personage than Rodama II., King of Madagascar, indulged in the scientific pastime of inoculating his ministers first with all kinds of virus to see how it would operate on them! Their fate is not recorded, but it is suggested that they went the way of Pasteur's rabbits and other victims of experiment. Dr. Vinson is quoted as saying that King Rodama "believed that a cure for all diseases, and particularly those of the skin, might be found in a homeopathic virus. He made a series of curious experiments. He accumulated in a vial a little of all the poisons of humanity, and was convinced that the mixture would be a panacea for all contagious maladies." As Solomon is authority for saying that there is nothing new under the sun, it would be interesting to know who preceded King Rodama in the practice of inoculation, and so on to the origin of things.

VETERINARY ARTISTS.—Mr. Adrian Jones, of the Army Veterinary Department, has, for the third time, been fortunate in having his work in modelling admitted to the exhibition of the Royal Academy. This time his production is a statuette, admirably designed and worked out, entitled the "Camel Scout," representing one of our soldiers in the Soudan mounted on a "Ship of the Desert." The figures are wonderfully spirited and correctly modelled, and have excited much attention and favourable comment. Mr. Jones' first exhibit was a fine model of a hunter (a copy of which he presented to the R.C.V.S.), and the second was a huntsman and hounds, for which he obtained the prize of £70, given by the Goldsmiths' Company.

GRATITUDE?—Some months ago, an American veterinary surgeon, Mr. Frank Billings, brought four children, bitten in America by a dog supposed to be mad, to M. Pasteur's laboratory in Paris. While in that city, Mr. Billings could not enough extol M. Pasteur's "honesty and disinterestedness in the cause of science," and goes on to say "he most generously explained to me all his prophylactic methods. I have helped him, and worked in his laboratory—I say helped, because I showed him certain methods, for which in exchange he gave me the secret of his different virus." No sooner, however, had Mr. Billings' foot touched his native shore, than his tone alters, and his latest utterance, according to the *Pall Mall Gazette* of March 20th, in speaking of the so-called hydrophobic vaccine is as follows:—"What he (Pasteur) injects into them (his human patients) ain't stronger than rain water, and it ain't nearly so dangerous as ordinary vaccine." We trust, for the credit of our American colleague, that the story is not true.

THE HISTORY OF THE GERM THEORY OF DISEASE.—According to the *Revue Scientifique*, the credit of discovering that zymotic diseases are due to germs belongs not to M. Pasteur or any of his contemporaries, but to a Dr. Goiffon, who died at Lyons more than a century and a half ago. Goiffon's work on the "Origin of the Plague" was published in 1721. It appears (so writes his fellow-townsman, Dr. Mollière) to have created considerable stir at the time, both in his native town, where he was famous for his practical skill, and abroad. The French schools of medicine, however, ignored him. He writes: "Minute insects or worms alone can explain these diseases. It is true they are not visible; but it does not therefore follow that they are non-existent. It is only that our microscopes are not at present powerful enough to show them. We can easily imagine the existence of creatures which bear the same proportion to mites that mites bear to

elephants. No other hypothesis can explain the facts. Neither the malign influence of the stars, nor terrestrial exhalations, nor miasmata, nor atoms, whether biting or burning, acid or bitter, could regain their vitality once they had lost it. If, on the other hand, we admit the existence of minute living creatures, we understand how infection can be conveyed in a latent condition from one place to break out afresh in another." On the whole it must be confessed that few people could give a better account of the germ theory nowadays.

MAD ANIMALS.—According to the *Freeman's Journal*, recently a donkey got mad in Meelick, and took possession of a cross road, where he remained for a day and night, and furiously attacked anything that passed. All traffic was stopped for the time, and he could be heard braying that night two miles distant. Next day the friendly bullet of a policeman put an end to his sufferings. Great excitement is felt in the district, in consequence of a heifer having become mad a few days previously and attacking her owner, who fortunately escaped.

TAIL SOAK.—Henry Barnes, a blacksmith, was summoned by Inspector Peet, of the R.S.P.C.A., for having, on the 4th May, cruelly ill-treated a cow by cutting open its tail.—Mr. Bell appeared for the defendant, and Mr. Lamport for the Society.—The defendant said the cow belonged to the Rev. J. Canick, and thinking it was suffering from "Tail Soak," cut open its tail, and inserted a quantity of salt into the wound, which he then tied up. The animal was under veterinary treatment for an entirely different ailment, and defendant received no instructions to do as he did.—Mr. Bell submitted that Barnes, who had acted as a farrier for thirty years, was asked to attend the cow, and by doing as he did relieved it. If the defendant did it to relieve the cow he was not guilty of the charge of cruelty.—The Bench did not consider there was any intentional or wanton cruelty, but thought it would be better if more knowledge of a veterinary character was more widely disseminated. Defendant's knowledge appeared to them to have been of rather an antiquated character in this instance.

A PROLIFIC COW.—A cow belonging to Mr. Philip Bogart, of Whitchurch, has given birth to five calves within twenty-nine months. Two years last December she had twins, last year she had another calf, and this season she has given birth to two more. All are living.

RABIES IN DEVON.—Owing to a serious outbreak of Rabies amongst the valuable pack of foxhounds with which Mr. Bragg hunts the Moreton-Hampstead country in Devon, it has been determined to destroy the whole of the hounds. The disease was brought into the kennels by a draft of young hounds recently purchased. This is the second pack of Mr. Bragg's that has been destroyed from a similar cause.

TUBERCULOSIS AMONG COWS IN PARIS.—The Council of Health in Paris has reported in favour of the expulsion of all dairy cows from that city, and only the toleration of a very few, the owners of which can show exceptional conditions of salubrity. There are upwards of 5,000 of these animals in the capital, and they are found to be a prolific source of Pulmonary Consumption. The milk of a great number of them is alive with the bacillus which wastes the tissues of cows and human beings attacked with Phthisis. A syndicate of dairymen who have taken stables which they use for byres, on long leases, cry out in the name of vested rights against the hardship of their business being broken up and no compensation granted. It has been suggested that M. Pasteur might find a means of subduing Phthisis, and thus rendering it safe to drink the milk which is drawn from cows kept in confinement. The Council of Health has, however, turned a deaf ear to the suggestion, and will continue to do so.

Correspondence.

INCORRECT DESIGNATIONS.

DEAR SIR,—I have before me a very useful and instructive little book, entitled "Animal Castration," in which I find the author adds the letters, H.F.R.C.V.S. to his name. With your permission, I should like to draw his and our other American friends' attention to the fact that no such distinction exists as Honorary FELLOW of the R.C.V.S. Our Council are empowered to confer the honorary distinction of ASSOCIATE, but not that of FELLOW, which can only be obtained by graduates of the R.C.V.S. who have passed the Fellowship examination and paid the requisite fees.

I expect the gentleman referred to has not had his attention drawn to this before, or he would not have used the "letters." Therefore, my object in troubling you, sir, is to call attention to it, and ask our distinguished colleagues to use the title conferred upon them, viz., HONORARY ASSOCIATE, and not the fictitious one of HONORARY FELLOW. "TRUTH."

A CORRECTION.

SIR,—I should be glad if you would be good enough to mention in your next issue, that at page 438 of your June number, Mr. Price's resolutions should read: 37 votes against 15, and 33 votes against 17, in lieu of as stated.

A. W. HILL,
Secretary.

Royal College of Veterinary Surgeons.

THE CONDUCT OF DISCUSSIONS.

SIR,—The absence of Mr. Greaves from the June meeting of the Lancashire Veterinary Medical Association has prevented the reply which I had intended making that gentleman, to his letter of May. I notice that in the current number of your Journal, Mr. Alexander Lawson has made answer to this personal attack, and I will therefore content myself with a very brief reply. In the first place, I desire to point out that during the discussion in our society on the Fellowship Clause, neither the mover, seconder, nor other speaker in favour of the resolution Mr. Greaves refers to made any personal allusions whatever; they simply directed their remarks to the principle which makes the Fellowship examination into a portal for a seat in Council and a place on the Board of Examiners. Mr. Greaves feels "amazed at the furious state some of these men get into about this ninth clause," and charges us with seeking to "stir up strife and squabbling, renewing the bear-garden scenes," etc.

I submit that if any one is entitled to the term "furious" it is Mr. Greaves himself, and that the unprofessional, ungentlemanly language in which he has indulged is more calculated to promote strife, and bring disgrace on our body, than any possible difference of opinion; and I can discover no reason why Mr. Greaves should have adopted this course, other than the extreme weakness of the cause he seeks to defend.

It is to be hoped that in the future discussions on the Fellowship Clause, and of all other professional matters, it may be possible to distinguish between principle and personality, and that argument will be substituted for an assemblage of words, denouncing and defaming on the one hand, whilst a song of self-adulation is set up on the other.

102, Quay-street, Manchester. JNO. B. WOLSTENHOLME, M.R.C.V.S.

WHAT WILL FELLOWS DO NEXT? OR WHAT ARE WE POOR MEMBERS TO DO?

SIR,—Recently I received a letter, amongst other qualified veterinary surgeons, requesting me to send my tender per annum for veterinary attendance (I finding medicine) to six horses, the property of a Vestry in the N.W. district of London; I accordingly forwarded my estimate, which was twenty-five shillings per horse, examinations and operations extra.

In due course I was informed that Mr. —— F.R.C.V.S.L., had received the appointment, his estimate being fifteen shillings per horse. It was well known to me that an unqualified practitioner had been doing the work for some years previously, and had been paid twenty shillings per horse. Surely if "Fellows" will take contracts at five shillings a horse less than unqualified practitioners, it will not heighten the profession in the eyes of the public.

I have been told that we poor Members, who hopelessly aspire to the Fellowship degree, are to look to the "Fellows" for example and guidance; but if the above is a specimen of their system of procedure in business matters, I for one prefer to remain a modest M.R.C.V.S.L. E. M. DAVY.

95, Abbey-road, St. John's Wood, N.W., 18*th June*, 1886.

MEETINGS OF VETERINARY SOCIETIES.

The next meeting of the Royal Counties' Veterinary Medical Association will take place at Hungerford on July 13th, at one p.m.

Several contributions and reports are unavoidably held over until next month.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from W. Broughton, Leeds; R. W. Burke, A.V.D., Cawnpore; F. Duck, A.V.D., Aldershot; E. E. Bennett, A.V.D., Aldershot; W. Ward, Manchester; J. Nunn, A.V.D., Glasgow; T. Marriott, A.V.D., Jullundur; A. Green, Dudley; A. Broad, London; T. Chambers, Dudley; J. B. Wolstenholme, Manchester; G. Gartside Mayor, Kirkham; C. Gresty, Newcastle-on-Tyne; F. Smith, A.V.D., Aldershot; F. Raymond, A.V.D., Woolwich; J. S. Hurndall, Liverpool; A. W. Russell, A.V.D., Dublin; H. Kidd, Hungerford; J. C. Berne, A.V.D., Aldershot; "Truth"; J. W. Ingram, Manchester; E. M. Davy, London; A. W. Hill, London.

BOOKS AND PAMPHLETS: *Dr. P. G. Unna*, Ichthyol und Resorcin; *Dr. T. M. Dolan*, Hydrophobia: Pasteur and his Methods; Second Annual Report of the United States Bureau of Animal Industry for 1885; *J. Shortt, M.D., V.S.*, A Manual of Indian Cattle and Sheep; *T. J. Symonds and J. Mills, M.R.C.V.S's.*, An Epitome of Veterinary Materia Medica and Therapeutics: Weights and Measures, Posological Table, and Index to Veterinary Medicines; *Sir F. Fitzwygram*, Horses and Stables.

JOURNALS, ETC.: *American Veterinary Review; Oesterreichische Vierteljahresschrift für Wissenschaftliche Veterinärkunde; Quarterly Journal of Veterinary Science in India; Revue Vétérinaire; Lancet; Recueil de Méd. Vétérinaire; Annales de Médecine Vétérinaire; British Medical Journal; Wochenschrift für Thierheilkunde und Viehzucht; Der Hufschmied; Der Thierarzt; Mark Lane Express; Live Stock Journal; Journal of the Royal Agricultural Society; American Live Stock Journal; Edinburgh Medical Journal; La Clinica Veterinaria; Echo Vétérinaire; Journal of the National Agricultural Society of Victoria; Revista Popular de la Exposicion Rural; Journal of Society of Arts; Outing.*

NEWSPAPERS: *East Grinstead Observer; West Cumberland Times; Hampshire Evening Mail; Bombay Gazette; St. James's Gazette.*